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Editorial Notes

WHAT is the reason for the great increase in interest in archaeology that has taken place recently? There is no doubt about it, for it is proved by the number of archaeological books published, by the popularity of television programmes, by articles in the press and last (but not least, from our point of view) by the rising circulation of ANTIQUITY. New readers have written to say that they are pleased with the contents of ANTIQUITY, so we may conclude that it tells them what they want to know. We try to keep them informed about what archaeologists are discovering about man's past everywhere—how and when he first made tools and learnt to make and use fire, what sort of roads he made, what his religious beliefs were and so on. Every year we find out more and more about these basic things, for archaeology is now a very live subject. But we must have a field for our activities, and every year that field is getting smaller and smaller.

There are many causes at work. Ancient sites are deliberately destroyed or obliterated. At one end of Italy excavation is revealing the riches of the Greco-Etruscan city of Spina on the north-east coast, while at the other bull-dozers are at work destroying the oldest Greek colonial city, Metapontum, and the local archaeologist can do nothing but stand by and pick out a few of the more striking objects thus brought to light. He and his colleagues made their protest but it was of no avail. We are told about the Greek vases found on the former site (see *The Times*, 28 March last), but the destruction of Metapontum is passed over in discreet silence. In the Nile Valley, a whole country, Nubia, is to be submerged by a huge dam and reservoir, so that its early history and prehistory will be for ever irrecoverable. It is unlikely that letters of protest published in the press would have much effect, but they would at least prove to posterity that a few people regretted the loss. A few people did in fact write such letters, but it was not until someone pointed out that the famous temple of Abu Simbel would be submerged that *The Times* published any of them. That will of course be a great loss, but it is not the greatest, which is that all the unknown and unexcavated ancient sites—villages, temples, churches and cemeteries—will be submerged also, and it is the excavation of these, spread out over the years, that will be for ever impossible, once the waters have covered them. It is the loss of this field of research, and of the new knowledge potentially present therein, that archaeologists most regret.

For it is acquiring knowledge about prehistoric and early historic periods that provides the incentive for archaeological research; and when we archaeologists have

done our bit, we display the results in museums, publish them in books and journals for others to read, and encourage people to go and look at the remains of the buildings we have uncovered. Thus, then, from this direct contact with the work of earlier men's hands they may get a deeper insight into the past—and the present which has developed out of it. Sometimes we do not have to do any uncovering ; the work lies open to our view without it. England is still rich in the remains of prehistoric fields, abandoned some 1600 years ago and never since disturbed by human activities. These fields are marked by banks called lynchets on the slopes of a hillside, and some of them still show the remains of the old stone field-walls, and even occasionally the actual marks of the furrows ; see for instance those at Grassington in Yorkshire (ANTIQUITY II, no. 6, June 1928, p. 170) and in Wiltshire (*Wessex from the Air*, plates 19 and 20). Could anything give a more intimate glimpse of prehistoric life than these fields which sustained it ? Nowhere else in Europe could such fields be found so perfectly preserved ; yet we are obliterating them. Heroic efforts are being made by individuals to persuade a reluctant Government department to schedule them and so preserve them from obliteration by ploughing, and some have been so scheduled—always on the initiative of private individuals.

These things may seem to some of our readers to be matters that concern us in England only, and they may wonder why we call attention to them publicly in a journal that is read by the people of many other countries. But people often come to England on their holidays or to study archaeology ; we want to take them to see our prehistoric sites, and they enjoy exploring them and learning from them. The present writer has often taken people to see them himself—students of our local university studying history and professional students of archaeology from abroad who come here because we have such things to see, and because we have developed the pursuit of field archaeology further than other countries. What folly to destroy our priceless and irreplaceable heritage !

Unfortunately this is not the end of the story. Since the war there has been a holocaust of destruction of archaeological sites and their amenities by many agencies, and the pace is quickening. One might have thought that, when the downs had all been ploughed up, at least the barren heaths and moorlands would remain for the field archaeologist to explore and the rambler to enjoy. Not a bit of it. Another government department, the Forestry Commission, has seized them and is planting them with dense forests of conifers. Soon there will be no open country left anywhere. And here the Ancient Monuments Inspectorate is powerless, because one government department cannot dictate to another. These heaths and moors abound in the handiworks of prehistoric man ; only recently the present writer found some unrecorded linear earthworks on one of the New Forest heaths that was scheduled for afforestation. For it is a mistake to suppose that, as someone rather naïvely remarked, all ancient sites are known and marked as such on the map ! We regret not only the obliteration of these things by afforestation, but perhaps even more the deprivation of the field of our explorations. There are many people who take pleasure in rambling over open country to get fresh air and exercise combined with an intellectual interest ; these amenities count as much with them as does the archaeology. In this matter we think we can speak also for nature lovers generally.

EDITORIAL NOTES

The B.B.C. Television Service sends us the following information about the archaeological programmes they are preparing. On 31 July there will be a programme on the excavations at Jericho directed by Dr Kathleen Kenyon. The film was taken at Jericho itself last March, and it shows amongst other things the pre-pottery neolithic town walls and tower—by far the oldest in the world—the discovery and clearance of two more plastered skulls (found this year), and some shots of the Bronze Age tombs with their unusually well preserved contents, taken immediately after the tombs were opened. On 18 September there will be a programme on Pompeii. Plans for the winter include programmes on the Early Peoples of Dartmoor, Carnac (Brittany), and on the Faience Beads, with shots of the intrusive Bronze Age burial in the Mound of the Hostages at Tara in Ireland.

The Index to the first twenty-five volumes of ANTIQUITY will be published and on sale soon after the publication of this number. It is expected that it will be much in demand, and readers who wish to buy it are advised to write at once to the publisher (H. W. Edwards, Ashmore Green, Newbury, Berks, England) ordering it. The price is £2 10*s* or $7·50, and postage is included in the price.

We often get letters from those wishing to take part, as voluntary diggers in excavations, enquiring what they should do. They should write to the Assistant Secretary, Council for British Archaeology, 10 Bolton Gardens, London, S.W.1, asking for the Calendar of Excavations issued each month from March to September by that body. The Calendar states where volunteers are needed, and can be obtained regularly for an annual fee of three shillings. It also gives information about summer schools, training excavations and week-end conferences. Prospective subscribers should write to the Assistant Secretary enclosing their subscription in the form of a Postal Order, or cheque crossed and made payable to the Council for British Archaeology.

We are informed that the Second British fascicule of the *Inventaria Archaeologica* is now available. The set has been edited by Professor Hawkes and Miss M. A. Smith, and published by the Trustees of the British Museum. It consists of ten cards, covering five important Bronze Age hoards in the Museum, namely those from Plymstock, Maentwrog, Thorndon, Thenford Hill Farm and Meldreth.

The set costs 10*s* and may be obtained from Messrs Garraway Ltd., 11 Kensington Church Street, London, W.8, or from the British Museum. *Individual cards may be obtained from the Museum, price* 1*s each.* Postage is extra.

New readers may like to know that the Editor's autobiography, SAID AND DONE (Weidenfeld and Nicolson, £1 1*s*) was published last year and may still be obtained. Chapter 14 tells how the idea came to him of founding ANTIQUITY. The book has been very well reviewed.

Archaeology in the Philippines

by Michael Sullivan

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LITTLE more than thirty years ago, when a writer was invited to contribute an article to an encyclopaedia on the Stone Age in the Philippines, it was possible for the American Museum of Natural History to inform him that, so far as was known, there was no Stone Age in the Philippines. That the position has so greatly altered during the last three decades is largely due to the indefatigable efforts of an American collector and ethnologist, Professor H. Otley Beyer, to whom we chiefly owe such systematic archaeological surveys as have been carried out in the archipelago. Much of his work, however, remains unpublished or is not generally available, so there may be some value in a short summary of what archaeology has revealed of the cultural history of the Philippines during these three decades.

During the 19th century, a number of travellers, planters and others turned up ancient pottery and stone implements in various places in the archipelago, but no archaeological exploration was carried out until Alfred Marche, a French traveller and explorer, arrived on Marinduque in the Visayan Islands in April, 1881. In the following three months he opened a large number of jar- and coffin-burials, the contents of which he took back with him to France where they were deposited in the Trocadéro Museum in Paris. In the years 1922–24 Dr Carl Guthe carried out an extensive exploration in the Visayan Islands. His work was no more systematic than that of Marche, but resulted in the collection of a huge quantity of material, and in the identification of a large number of promising sites, chiefly in Cebu, Leyte and Bohol. The greater part of the Guthe Collection is in the Museum of the University of Michigan at Ann Arbor. In addition to these two major explorations, a considerable quantity of material has been found through the years by other collectors—most of them amateurs—among whom the most prominent were Hester, Wilson, Roth and Worcester. In 1940, Olov Janse carried out careful excavations of burial sites in Batangas Province, while since 1950 Solheim and Manuel have investigated jar-burials in the Bondoc Peninsula. For the rest—excepting the work of Dr Beyer himself—that so great quantity has been found and brought to the Museum in Manila is almost entirely due to chance finds and the treasure-hunting which inevitably followed in the wake of discovery. It is consequently of more value for the light it throws on the distribution of pottery and artifacts, and for the promise it holds out for future excavation, than in establishing a precise chronology for any given area.

In February 1926, shortly after work had been started on the construction of the dam at Novaliches, fifteen miles north-east of Manila, reports were brought to Dr Beyer of the discovery on a hill-top of the remains of an ancient burial ground. Dr Beyer, at that time an ethnologist in the Government Service, was then about to quit Manila to take up a Research Fellowship at Harvard, but decided to investigate the site before leaving. He discovered that the excavations had revealed a stratum containing a great quantity of Iron Age pottery above which lay a deposit of Chinese celadon wares of the

14th century. Near by he found a further deposit containing stone axes of Neolithic type. These discoveries, coming one after another in a small area, led Dr Beyer to

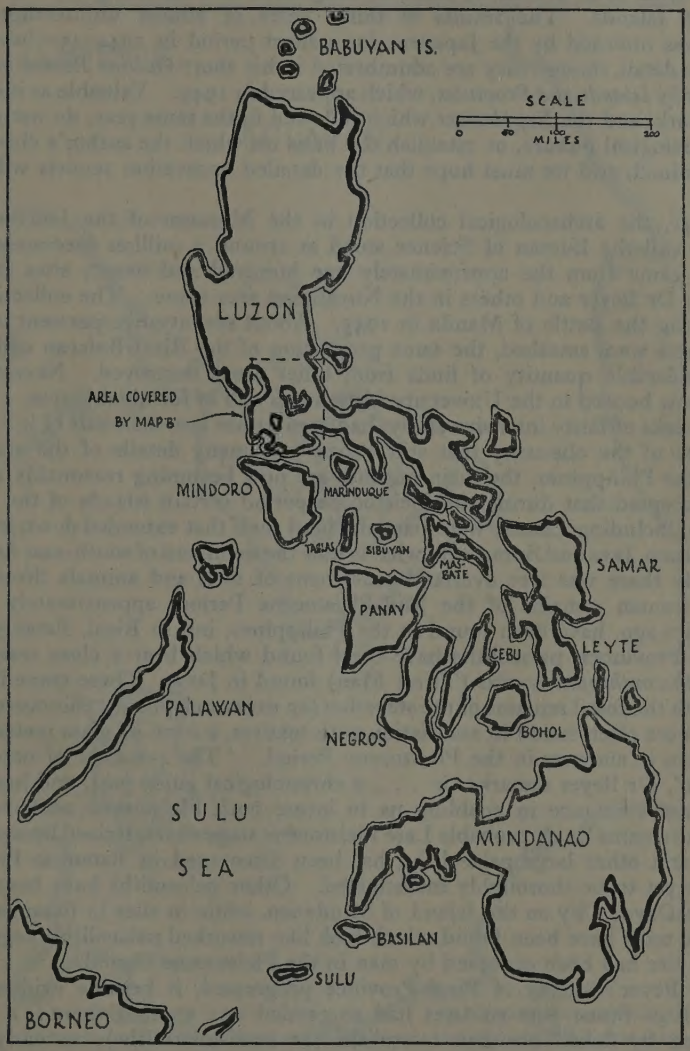

Fig. 1. SKETCH MAP OF THE PHILIPPINE ISLANDS

abandon all thought of leaving the Philippines, and to undertake a systematic examination of the Novaliches area. During the following four years this survey was extended to

cover the whole of Rizal Province. The Rizal survey was followed in 1932 by a survey of Batangas Province, which was carried on up to the beginning of the Pacific War, being punctuated from time to time by other investigations and collecting tours in Luzon and the Visayan Islands. The results of thirty years of almost uninterrupted work—Dr Beyer was interned by the Japanese for a short period in 1944–45—have not been published in detail, though they are adumbrated in his short *Outline Review of Philippine Archaeology by Islands and Provinces*, which appeared in 1949. Valuable as it is, however, this brief work, and the *Supplement* which followed in the same year, do not give a complete archaeological picture, or establish the basis on which the author's chronology has been determined, and we must hope that the detailed excavation reports will appear in due course.

By 1941, the archaeological collection in the Museum of the University of the Philippines and the Bureau of Science stood at around a million specimens, of which nearly half came from the approximately one hundred and twenty sites excavated or explored by Dr Beyer and others in the Novaliches area alone. The collection suffered heavily during the Battle of Manila in 1945. About seventy-five per cent of the larger ceramic pieces were smashed, the same proportion of the Rizal-Bulacan collection lost, and a considerable quantity of finds from other areas destroyed. Nevertheless, the collection now housed in the University Museum is still of formidable size. The writer, after four weeks of fairly intensive study, had seen rather less than half of it.

In spite of the obscurity that still hangs over many details of the archaeological picture of the Philippines, the main outlines are now becoming reasonably clear. It is generally accepted that during the Pleistocene period certain islands of the Philippines archipelago, including Luzon, were part of a land shelf that extended down in a great arc through Borneo, Java and Sumatra to what is now the mainland of south-east Asia, and that consequently there was free overland movement of men and animals throughout that area. No human remains of the Mid-Pleistocene Period, approximately 250,000 to 300,000 years ago, have been found in the Philippines, but in Rizal, Batangas, Bulacan and Davao Provinces, palaeoliths have been found which bear a close resemblance to tools of *Pithecanthropus erectus* (Trinil Man) found in Java. These stone implements, together with the fossil remains of the stegodon (an extinct elephant), rhinoceros and other mammals, were often found in association with tektites, a form of glass meteorite known to have fallen in showers in the Pleistocene Period. 'The presence of natural tektites in a deposit', Dr Beyer remarks 'is . . . a chronological guide post, and has frequently been of great assistance in enabling us to locate both Pleistocene artifacts and fossil mammalian remains'. A probable Late Pleistocene stage characterized by stone cleavers, hand axes and other large palaeoliths, has been discovered in Batangas Province, but the site has yet to be thoroughly investigated. Other palaeoliths have been picked up just outside Davao City on the Island of Mindanao, while in sites in Batangas a number of Neolithic tools have been found which look like reworked palaeoliths, suggesting that a Neolithic site had been occupied by man in the Pleistocene Period.

As Dr Beyer's survey of Rizal Province progressed, it became evident that four successive later Stone Age cultures had succeeded one another there: a Mesolithic, characterized by flaked obsidian microliths (or semi-microliths); an early Neolithic, comprising both flaked microliths and stone adzes with ground surfaces; a Middle Neolithic, characterized by shouldered and ridged axe-adzes (FIG. 3, no. 3); and a late Neolithic. The Late Neolithic culture, which Beyer again divides into four phases, seems to present a picture of ever-increasing richness, evolving from an 'Early Nephrite Culture' through a transitional stage to the period of the early 'stepped' adze (FIG. 3,

nos. 1 and 2), ending in a phase characterized by the use of the fully-stepped polished adze, accompanied by jade and stone beads, bracelets and other jewellery (FIG 3, no. 4).

FIG. 2. SKETCH MAP SHOWING PRINCIPAL ARCHAEOLOGICAL SITES IN CENTRAL LUZON

Dr Beyer describes the wide use of nephrite in the Middle Neolithic period as a 'jade cult',—although it is not suggested that jade occupied a place in Philippines life

or ritual comparable to that which it held in ancient China. Between seventy and eighty per cent of all Neolithic implements found in Batangas Province were nephrite, but as yet no native source of jade has been found in the islands. Beyer believes that this stepped adze culture, combined with the use of jade, originated on the mainland of Asia, citing the example of the stepped adze found by Fathers Maglioni and Finn on Lamma Island and in the Hoifung region of southern Kwangtung. He considers that the form of the tool itself was further developed in Luzon, and suggests that it was carried in a south-eastward direction down through the islands to New Guinea and New Zealand, but that eventually this movement dried up, ' when the Malayan peoples entered the Philippines from the south-west bearing the very different culture exemplified in the remains of the Early Iron Age '.

Regarding the Philippine Neolithic culture in general, it would seem that there must have been close intercourse with mainland China, for the use of jade, the early forms of the stepped adze and the shouldered axe are all found in South China and Indo-China sites. The Philippines, however, present one significant difference from the Neolithic culture of these areas. For whereas in South China, Indo-China, Formosa and Japan, the shouldered axe is associated with cord-marked pottery, Dr Beyer takes a position of extreme caution in maintaining that so far no definite evidence has been found for the existence of pottery in any Neolithic sites in the Philippines—a fact which, if substantiated, suggests that the archipelago, for all its close association with continental Asia, was in this respect at least more closely connected with the islands of the Pacific, in whose Neolithic cultures likewise no pottery has yet been discovered.

Another respect in which the archaeological history of the Philippines differs from that of the adjacent mainland is in regard to the Bronze Age. Not only are bronze objects very rare, but those that have been found were all associated either with Neolithic or with Iron Age artifacts. There was, therefore, strictly speaking, no Bronze Age in the Philippines at all. There are but two groups of bronze artifacts, of which one consists of a small number of bronze celts, which show a clear relationship to those of the Dongson culture of Indo-China (FIG. 3, no. 5). These were all found in Batangas Province—the exact circumstances have not yet been published—in association with Late Neolithic ' plain-backed ' and ' transitional ' adzes. In the opinion of Dr Beyer, this supports the view that ' either the bronze specimens themselves, or the metal of which they were made, came over to Luzon from northern Indo-China or the South China coast '. He dates these bronze celts between 1000 and 500 B.C. The second group of bronze objects, unearthed in Site 13, Lake District, north of Laguna de Bay, central Luzon, consists chiefly of a series of bronze ear-pendants and dagger-handles, the latter in the form of modelled heads with elaborate headdresses. In the latter, Dr Beyer sees a kinship to certain Bronze Age specimens from Indo-China and Formosa (FIG. 3, no. 6). The ear-pendants on the other hand (FIG. 3, no. 7), which in his opinion seem not to be related to any Bronze Age area outside the Philippines, do in fact bear a rather striking resemblance to a type of gold pendant found in Late Tumulus Period sites in Japan (between approximately A.D. 350 and 450). This date would also fit the dagger-handles, the style of which suggests a remotely Indian inspiration.

On the basis of present knowledge, therefore, the ' bronze culture ' of the Philippines consists of no more than two small and isolated groups of objects, separated in time by perhaps as much as seven or eight centuries, one of which shows affinities with the Dongson culture of Indo-China, the other with, possibly, proto-historic Japan on one side and Hinduised South-east Asia on the other. As there was no true Bronze Age, therefore, the Late Neolithic merges imperceptibly into the beginning of the Iron Age which,

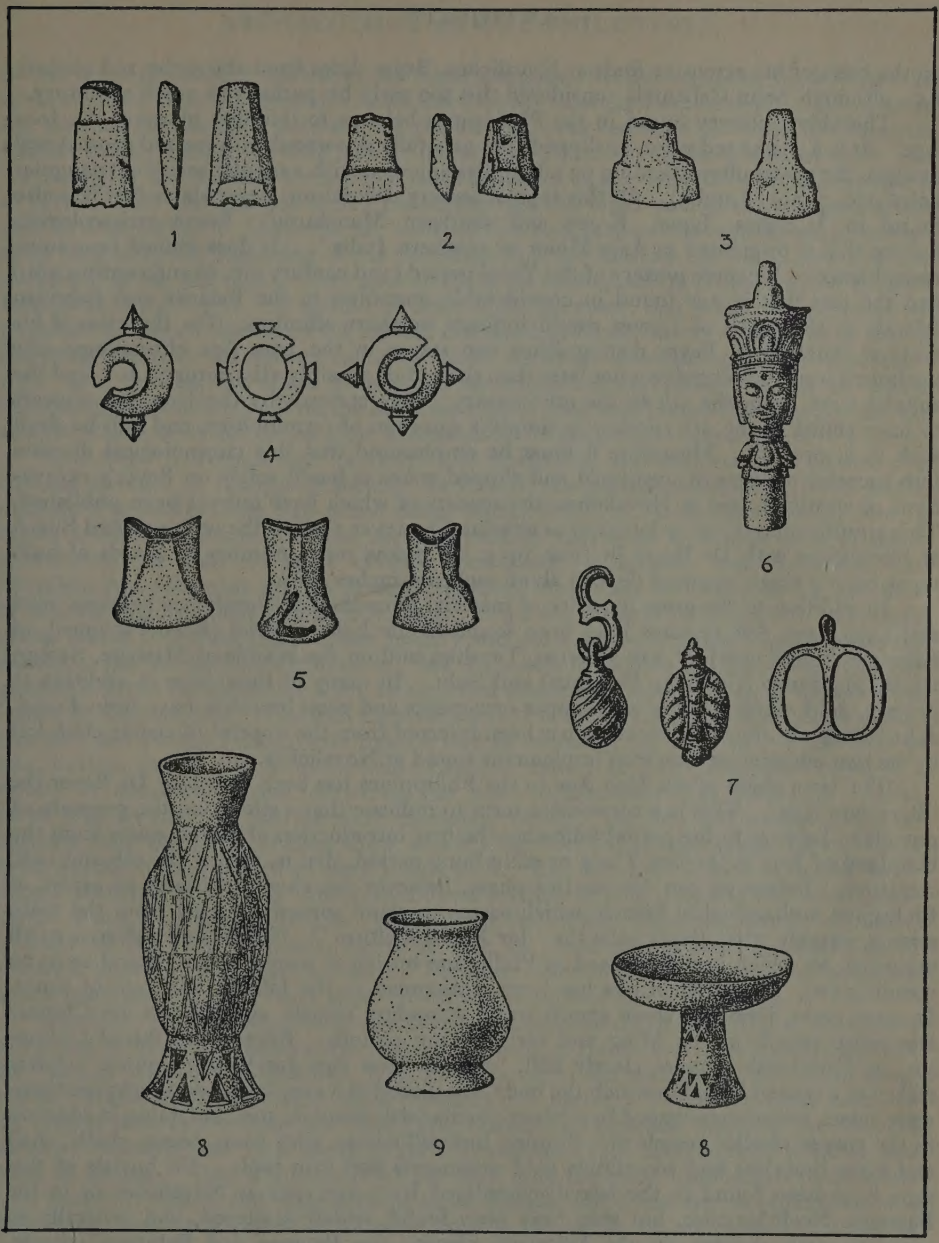

FIG. 3

1 and 2. Neolithic 'stepped' adze from Batangas Province, Luzon. (About ½ actual size)
3. Shouldered axe-adze types from Batangas. (About ½ actual size)
4. Nephrite pendants from Batangas. (About ½ actual size)
5. Bronze celts from 'Late Neolithic' site in Batangas. (About ½ actual size)
6. Bronze dagger-handle (?) from Lake District, Rizal Province, Luzon. (About ⅔ actual size)
7. Bronze ornaments from Lake District. (About ⅔ actual size)
8. Reconstruction of Early Iron Age pottery vessels from Novaliches, Rizal Province. (About ⅛ actual size)
9. Early Iron Age pottery vessel from Calapan, Mindoro Island. (About ¼ actual size)

(*after* Bayer)

on the basis of his extensive finds at Novaliches, Beyer dates from about the 2nd century B.C., although Stein Callenfels considered this too early by perhaps as much a century.

The oldest pottery found in the Philippines belongs to this first phase of the Iron Age. It is a coarse red ware, unslipped, but generally decorated with incised geometrical designs, the vessel often standing on a high base pierced with a regular series of triangular holes (FIG. 3, nos. 8 and 9). Of this type of pottery decoration, Beyer states that it is also found in 'Celebes, Japan, Korea and southern Manchuria. Some archaeologists believe that it originated in Asia Minor or southern India'. It does indeed bear some resemblance to Japanese pottery of the Yayoi period (2nd century B.C. to 2nd century A.D.) and the fact that it was found in considerable quantities in the Batanes and Babuyan Islands to the north of Luzon would indicate northern affinities. On the basis of his finds at Novaliches, Beyer distinguishes two stages in the Iron Age chronology—the unslipped ware, coming down not later than the 3rd or possibly 4th century A.D.; and the slipped ware, from the 4th to the 9th century. The reason why the Iron Age appears to have ended in the 9th century is simply a question of terminology, and will be dealt with in a moment. Meantime it must be emphasized that this chronological division into successive stages of unslipped and slipped wares is based solely on Beyer's excavations of stratified sites at Novaliches, the reports of which have not yet been published. This stratification is not to be taken as absolute, however: when the writer visited Site A at Novaliches with Dr Beyer in June 1955, we picked out a number of shards of both types from a single exposed deposit about eighteen inches thick.

In addition to the great quantity of material unearthed at Novaliches between 1926 and 1930, Iron Age remains have been found in the Lake District (Rizal Province), in Batangas (traces only), at San Narciso, Tayabas, and on the islands of Masbate, Samar, Cebu, Mindanao (Cotobato Province) and Sulu. In many of these sites in addition to pottery, gold, silver, bronze and copper ornaments and glass bracelets have been found. A knowledge of the art of weaving has been inferred from the imprint of coarse cloth left in the rust encasing certain iron implements found at Novaliches.

The later phase of the Iron Age in the Philippines has been called by Dr Beyer the 'Porcelain Age.' This is a convenient term to indicate that a site, from the presence of porcelain, belongs to the period following the first introduction of glazed wares from the mainland of Asia in the late T'ang or early Sung period, that is, during the 9th and 10th centuries. Before we can discuss this phase, however, we should consider an aspect of Philippine archaeological history which seems to stand somewhat apart from the main stream, namely what Beyer calls the 'Jar Burial Culture'. If this term referred to all occasions on which jars were used in Philippine burials it would be so general as to be meaningless; for burial in jars has been widespread in the Islands until recent times. In most cases, however, these appear to be secondary burials, and the jars are Chinese stoneware vessels of the Ming and early Ch'ing periods. Beyer's Jar Burial Culture (or, to distinguish it more clearly still, 'Special Iron Age Jar Burial Culture') refers rather to a type of burial in which the body was placed in a very large coarse grey earthenware vessel, sometimes capped by a heavy circular slab of stone, and containing in addition to the corpse smaller vessels of a thinner, but still coarse, grey ware, beads, shells, shell and glass bracelets and sometimes gold ornaments and iron tools. No burials of this type have been found in the heavily-populated Iron Age sites at Novaliches or in the Batangas Neolithic sites, but they have been found, widely scattered, and generally in caves or rock shelters, in the following places: the Batanes and Babuyan Islands, southern Luzon (Tayabas), and on the islands of Marinduque (Marche's discoveries of 1881), Mindoro, Masbate, Samar and Mindanao. This scattered distribution may simply

be due to the accidents of discovery, for reports suggest that jar burials of this kind are far more common than the number of sites scientifically examined would imply. Beyer dates the Batanes Islands finds between the 3rd and the 10th centuries, those on the Babuyan Islands mostly ' from the first half (if not the first quarter) of the Christian era '; the Tayabas graves, excavated by Solheim and Manuel in 1950, ' have been tentatively dated at between A.D. 200 and 500 with a possibility that the lower part of the occupation site may be a bit earlier '. However, jar burial of this type seems to have persisted in certain areas long after the beginning of the Porcelain Age, for Manuel has found in a Spanish document of the late 18th century an account of the custom still in practice in the Batanes Islands as late as 1770. It should be made clear, however, that while the presence of porcelain of known date from the Asiatic mainland generally makes it possible to date a site fairly precisely, its absence cannot, in itself, be taken as indicating a ' pre-Porcelain Age ' date. Indeed, the whole question of the origin and chronology of this jar burial culture, and its connection with the common type of Iron Age burials found at Novaliches and elsewhere, is by no means clear and needs to be thoroughly investigated.

The term ' Porcelain Age ' is likely to be misleading if it conjures up a picture of a cultural advance in Philippine society—as though the use of porcelain in itself might indicate a primitive Iron Age phase being replaced by, or advancing suddenly into, a higher civilization marked by the use of porcelain, that most sure indication of social refinement. In fact, no such advance took place. Ethnically and culturally, the Porcelain Age folk were no less savage than their immediate ancestors, as the accounts of Chinese writers make abundantly clear. From the number of fragments and whole pieces found, it is clear that Chinese pottery and porcelain were being imported into the islands in the 9th and 10th centuries. Ma Tuan-lin, writing in 1317–19, was evidently quoting from an earlier source when he recorded that traders were coming to Canton from Luzon in the year 982. The first Chinese account of this trade appears in the *Chu-fan-chih* of Chao Ju-kua (1225), who reports that in exchange for such native products as wax, cotton, pearls and tortoise-shells, Chinese traders in the Philippines brought a variety of consumer goods, of which the most sought-after was porcelain. Chao Ju-ka tells us that the natives were extremely savage. At first the traders did their business from the safety of their ships, and if a traveller did venture ashore he was likely to be waylaid by the natives on some jungle path. But, he says, ' if anyone should throw them a porcelain bowl, they would bend down joyfully to pick it up and hop away shouting '. Wang Ta-yüan, writing in 1349, records that in exchange for native products the Chinese offered ' copper beads, bowls of blue or white flower pattern, small figured chintzes, pieces of iron and the like '. This may refer to the blue and white porcelain which has been found in such great quantites throughout the archipelago.

There were two routes through the Islands. One came down from China, Manchuria and Japan through the Batanes and Babuyan Islands to Luzon and thence down through the Visayan Islands to Mindanao, Sulu and Borneo ; this was clearly the route along which Chinese traders brought their porcelain for barter. The other route followed the reverse direction northwards from Java, Borneo and Celebes, bringing the Siamese wares of Sukothai (late 14th century) and Sawankolok (15th century) and possibly also those of Annam. One whole piece of the dark grey unglazed Cambodian pottery has been found in Bohol, and fragments in other islands, but there are no indications of a flourishing trade in Cambodian wares. During the whole of this period, the coarse native pottery was still made, though there appears to have been a deterioration in quality ; no doubt it was relegated to the kitchen, and the use of families who could not afford to buy the imported wares.

On the basis of finds made so far, the wares imported into the Philippines appear to be distributed roughly as follows :—

Area	Cambodia	Indo-China	Siam	China		
				T'ang-Sung	Yüan-Ming	Ch'ing
Batanes and Babuyan Is.	—	—	—	xx	xx	x
N. Luzon	—	—	—	xx	xx	xx
Central Luzon ..	—	x	x	xx	xx	xx
S. Luzon..	—	x	x	x	xx	xx
Visayan Is.	x	x	xx	x	xx	x
S. Visayan Is.	?	x	xx	x	xx	x
Mindanao	—	x	xx	x	xx	x

— = none.
x = some.
xx = plentiful.

Owing to the conditions under which much of this pottery was discovered, coupled with the great losses suffered during the war, too much reliance should not be placed on this rough table, which merely indicates distribution in a very general way. No systematic work has been undertaken since Dr Beyer's own unpublished study of 1932—which has in any case been rendered out of date by subsequent finds ; for a detailed analysis of the distribution of pottery types, therefore, we must await the appearance in Manila of a scholar with the monumental patience to sift through and examine the contents of many hundreds of trays of specimens in the University Museum. In the meantime, a few general remarks might not be out of place.

Chinese Yüan and Ming wares, particularly celadons and blue and white, are abundant in almost every area. Later Chinese wares are more common in Luzon than in the south, while the wares of Sukothai and Sawankolok, which have not been found in the Batanes or Babuyan Islands or in northern Luzon, are relatively uncommon in central Luzon, but become ever more abundant as one proceeds southward—which, considering that they probably arrived by the southern route through the archipelago, is only to be expected.

Of T'ang wares, the most frequently found seem to be *yüeh* types, and white or cream glazed porcellanous wares. Quantities of shards, and a few whole pieces of these types have been found, chiefly at Novaliches, Tagig and on the beaches at Navotas, a village on the coast north of Manila which is believed to have been one of the landing places for Chinese merchantmen. Very little of the lightly-potted reddish Changsha ware has been found ; perhaps it was not popular with the natives on account of its fragility and the tendency of the glaze to flake off.

The celadons and *Yüeh* wares (PLATE I, A) are naturally the commonest of the Sung wares to have been found in the Islands. While some are Lung-ch'üan pieces of high quality, the majority are clearly provincial types. Indeed, much of the pottery and porcelain found in the Philippines, particularly of the earlier periods, appears to be the product of local kilns in Kwangtung and Fukien, such as have been investigated by Lin Hui-hsiang of Amoy University and the late Malcolm Farley. One particularly fine

example of Sung Northern celadon was found in the Visayan Islands (PLATE II, A). *Ying-ch'ing* has been found in small quantities, as have the coarser types of *Ting-yao*. In the trays in the Museum I picked out a few small shards of *kuan* ware, but found no examples of *chün*, although fragments may be hidden somewhere in the vast collection, or may have been lost in the war. A single complete *Tzŭ-chou* piece was found in Cebu —a rather ungainly bottle decorated with a bold chrysanthemum design in black (PLATE II, B). Probable Yüan wares include a quantity of celadon, and a few examples of blue and white, one of which, a small bottle decorated with a blue flower pattern in panels separated by raised ribs, has its counterpart in a very similar bottle in the British Museum, which Soame Jenyns believes is 'perhaps 13th century'. This piece was destroyed during the war but fragments remain. This type is related to the Shu-fu wares, the intermediate stage in the evolution from Sung *ying-ch'ing* to the true blue and white of the Ming Dynasty.

From Ming times onwards the quantity and variety of Chinese wares found in the Islands becomes too great to be treated in a summary such as this. The blue and white

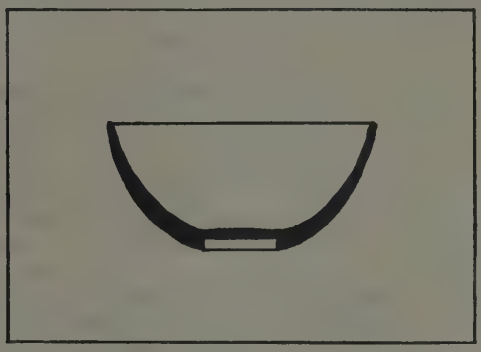

FIG. 4. SECTION OF 'HOLE-BOTTOM' BOWL, OF A WIDELY DISTRIBUTED TYPE

wares alone, which comprise the majority, range from the finest Ching-tê-chên porcelain made for the home market, to the coarse and vigorously-decorated so-called Swatow wares (PLATE III); they include also the thin and brittle 'kraak' porcelain of the late 16th and 17th centuries, 17th century 'transitional' wares and a number of examples of what Beyer has called 'hole-bottom wares'. This denotes a type of bowl with hollowed-out base and no footrim (FIG. 4). For some reason not yet explained these 'hole-bottom' bowls made for export, while relatively common in the Philippines, are rare in Indonesia, and so far as I know, unknown in Malaya.

To conclude this brief survey, we may glance at the archaeological circumstances under which a few of these finds have been made. The lowest level of Beyer's site 'G. 1200' in Cebu contained chiefly Chinese celadon ware and Sukothai ware, and on the basis of the latter should be dated not later than the 14th century. Above this lay a stratum containing Sawankolok and blue and white wares of the 15th century; some of these wares have been tentatively labelled as Annamese, but until the Annamese kilnsites are excavated and their products correctly identified, we must resist the common temptation to call 'Annamese' any blue and white not readily identifiable as something else.

The site then seems to have been abandoned until the 19th century, when both Chinese and European wares (chiefly English) are found. In Batagas Province Olov Janse excavated a small necropolis comprising twenty-seven tombs which contained a quantity of Chinese ceramics, chiefly early Ming celadons and blue and white, associated with the native unglazed red earthenware. In between the tombs at another site close by he found beads, stone implements and Ming wares—chiefly overglazed red and blue and white, including a number of ' hole-bottom ' bowls, and Sawankolok wares. Nothing more vividly demonstrates the fact that the Chinese export wares are an intrusion on a primitive society than this juxtaposition in the same site of Ming blue and white porcelain with stone artifacts.

As in blitzed London, the ruins of downtown Manila have presented a great opportunity to the archaeologist, which in one case at least has been grasped, and a stratified site carefully examined. Recently excavation has been carried out for the foundations of the Government Service Insurance Building, just east of the old Botanical Garden outside the walls. This area is the site of the Parian, the quarter to which the Chinese community was moved ten years after the founding of Manila by the Spanish in 1571. It existed as a separate ' Chinatown ',—at first almost as a Chinese Ghetto—until the British occupation of Manila of 1762–1764, when it was abolished, although a few Chinese may have continued to live there after the date. Last year E. Arsenio Manuel of the Department of Anthropology of the University of the Philippines carried out a careful examination, at five different points, of the sides of the trenches cut for placing the foundations of the Insurance Building (PLATE I, B). He reports that below three metres the soil is sandy and contains only the remains of mangrove roots and branches (Level A). From three metres up to about 250 cm. below the surface (Level B) he found a few stray stoneware shards, suggesting that there were probably pre-Spanish inhabitants in the vicinity who had a small quantity of Sung and Yüan pottery. Between 250 and 220 cm. (Level C), a larger quantity of Chinese black- or brown-glazed stoneware was found, together with some native red earthenware, and a small number of celadon and Sawankolok shards, indicating a more intensive occupation during the 15th century. It is not unlikely that Chinese merchants were then already beginning to settle in the Manila area. The next level, roughly from 220 cm. to 180–160 cm. (Level D), contained almost entirely Ming wares (chiefly blue and white), which from the types found, and the fact that Sawankolok wares have now disappeared, suggests a long period of occupation in the 16th and 17th centuries. This is overlaid by a layer of dark grey clay (Level E), in the lower part of which some Ch'ing blue and white and some Spanish tiles were found. Above these a layer of sand containing no shards whatever (Level F) suggests that the site may have been flooded at about the time of its abandonment in the mid-18th century. From 120 cm. to about 80 cm. we find renewed evidence of occupation (Level G), with a quantity of imported European wares, chiefly early 19th century English table china and stoneware beer bottles. From 80 cm. up to the surface (Level H), the earth is full of stone, brick and timber, the evidence of the building activities of the last hundred years*.

*When I visited the site in June–July 1955 and collected shards from the trench-sides and from the mounds of excavated earth, summer rains had already flooded the trenches up to the two metres level (see PLATE I, B). This outline is based largely upon information generously given me by Mr Manuel. When his detailed report is published, it should throw valuable light not only on the chronology of blue and white but also on that of many other later Chinese wares found in the Philippines—particularly the common stonewares and porcellanous celadons which were made during the Ming Dynasty in kilns in Fukien and Kwangtung.

Sites as accessible and as clearly stratified as this are rare in the Philippines. However, when we consider the Philippines as a whole, a great deal of ground has been covered during the last thirty years, the number of sites investigated or visited runs into several hundred, and an enormous quantity of material has been collected. Much of this material has been catalogued and the circumstances of its finding recorded by Dr Beyer himself in type reports which, fortunately, have survived the war ; but until these reports are published, scholars cannot make the best use of it, nor can the true value and extent of Beyer's own work be appreciated. Moreover, although so much has been accomplished, many problems remain to be solved. The question of whether or not pottery was made by Neolithic Man in the Philippines is of great importance, as is the true nature of the bronze culture,—if indeed it deserves the name,—and its relationship with mainland Asia. The chronology of iron age pottery needs further investigation, and the whole matter of the 'Jar-burial Culture' and its connection with the more widespread Iron Age culture is still obscure. It is very much to be hoped that before long Philippine archaeologists will have the opportunity to take on the double task of checking results already achieved and filling in some of the more important gaps in the general archaeological picture.

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Bossed Bone Plaques of the Second Millennium*

by John D. Evans

Cambridge University

Ever since, in 1893, Paolo Orsi published and described a group of these objects from the necropolis of Cava della Signora, Castelluccio[1], they have been generally regarded as of the highest importance for the study of W. Mediterranean prehistory. Orsi himself immediately recognized the parallel with those which had then been recently unearthed by Schliemann at Troy, and since his time the validity of this parallel has been generally admitted by archaeologists. All who have since then treated of the chronological problems of Sicily and the Western Mediterranean lands have accepted them as imports from Troy and a basis for synchronisms between the cultures of the Eastern and Western basins. Despite this, however, no study has as yet been published of these objects in which the Trojan and Sicilian groups have been treated together and closely compared. In 1939 a useful critical analysis of the evidence relative to the three Trojan plaques was published by Bittel[2], but he did not go on to make a similar study of the Sicilian ones.

In view of this situation, it has seemed to me worth while to collect together details of all the known examples of this class of object, and to attempt to draw some provisional conclusions about their relationship and their probable function. On both these questions my views differ widely from those of previous writers, and I hope in what follows to show good cause and reason for these differences.

Up to the present objects of this type have turned up in four separate areas of the Mediterranean, to wit, in Sicily and Malta, at Troy in western Anatolia, and very recently at Lerna in Greece. I shall start with the Western examples, which are also the most numerous.

Sicily

This is the only area in which objects of this class have been found on more than one site. Ten examples are known, more than from all other areas put together. They are all from the Syracuse region, seven from Castelluccio, one from Grotta Lazzaro, and two from Sante Croce[3]. All were associated with painted pottery and other material of the Siculan I (Castelluccio) culture.

In form and technique this group is very homogeneous, though there is a certain amount of variation in the details of decoration. They were made on the long bones of some animal (sheep ? goat ?), split down the centre, giving a strip which has a V-shaped

* We wish to thank an anonymous colleague for a generous gift, enabling us to have the drawings made to illustrate this article, and Professor Bernabo Brea for kindly having the plaques specially photographed. Editor.

[1] See note 3.

[2] 'Einige Bemerkungen zu trojanische Funden', *Marburger Studien*, ed. E. Sprockhoff, 1938.

[3] For nos. 1–6 see Orsi, *Bull. Pal. It.*, Anno xviii, 1892, pp. 155–6, 170–1, and pl. iv, 1 and 2; for no. 7, ibid., Anno xix, 1893, p. 215. No. 8 was first referred to by Maugini, 'Scoperte preistoriche in Sicilia', *Rev. scientifica industriale*, 13th April, 1879, but first fully published and described by Orsi, *Ausonia*, 1, 1906, p. 6 and fig. 1. For nos. 9 and 10 see Orsi, *Bull. Pal. It.*, Anno xliv, 1926, pp. 7 and 13, and fig. 4.

or U-shaped section and tapers towards one end. The bosses are oval to circular in form (the shape may vary a good deal, even on the same example) and normally every alternate boss carries decoration. The outline of the bosses is emphasized by one or more curved

Fig. 1. CASTELLUCCIO
Length, 14 cm. (5½ inches)

lines which follow their contours, and the rest of the surface of the object is also decorated, normally with some kind of reticulated pattern.

The decoration is always incised with a sharp point. In the best-preserved examples both the carving and decoration are very finely executed, the intricate decorations in

particular calling for an extremely sure and delicate touch. The upper surface was given a high polish. It was the care and skill displayed in the craftsmanship which led Orsi to assume that these objects must have been imported, since they seemed to him to be so much finer than any of the other products of the Castelluccio people. Not all, however, are up to this standard, and one or two are quite roughly carved.

The seven examples from Castelluccio were the first to be found. Six were unearthed in the tombs and one in the ruins of the village. Of these which come from the tombs only two were actually found by Orsi, the others having turned up in earlier clandestine excavations.

1. From tomb in Cava della Signora necropolis, Castelluccio. Length, 14 cm. Has 12 oval bosses, and every alternate boss carries decoration. The first boss carries a clear oculus-motive, closely resembling some Spanish varieties, the third, fifth and

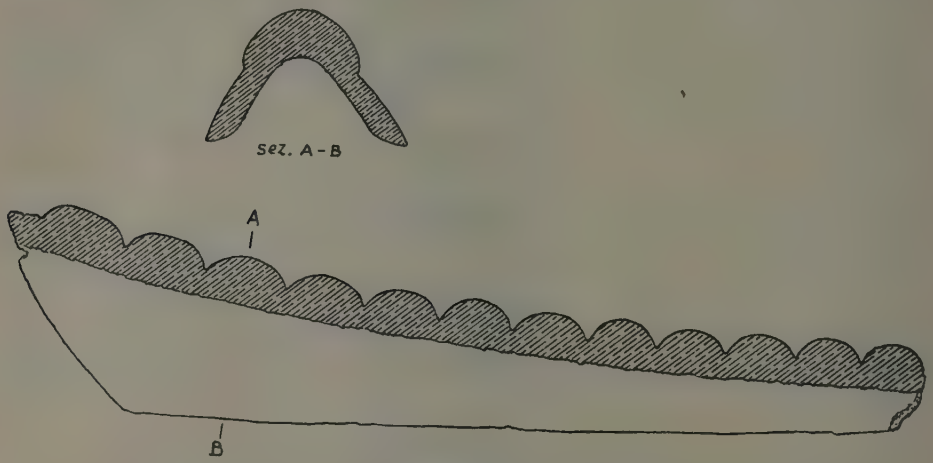

Fig. 2. SECTIONS OF CASTELLUCCIO PLAQUE (fig. 1)

seventh have volute or star patterns, whilst the ninth has a single dot in the centre and the eleventh a dot surrounded by a cross. The bosses are surrounded by two parallel curved lines on either side which emphasize their contours, whilst the remainder of the surface is covered with an elaborate reticulated pattern which is further complicated by small lozenges set crosswise on the lines with their ends pointing into the squares. This specimen is well-preserved and beautifully finished with a fine polish (figs. 1 and 2).

2. From tomb in Cava della Signora necropolis, Castelluccio. Length 5.5 cm. Has five oval bosses. It is a fragment, consisting of the lower portion only. The first and third of the surviving bosses have a double ' star ' or ' flower ' pattern, and the fifth has the ' dot and cross ' motive. The bosses are surrounded by a single line, and the background consists of a reticulated pattern, with smaller squares drawn in each corner where the lines cross. The remaining fragment of this plaque seems well preserved and has a good polish (fig. 3).

3. From tomb in Cava della Signora necropolis, Castelluccio. Length, 10.5 cm. A much worn example, broken off at the top. It has ten circular bosses, all badly

damaged, but showing ' slight traces of scratched decoration ' according to Orsi. The background decoration is more clearly visible, and is very unusual, consisting of parallel lines, with short lines disposed in groups of two and three to form triangles or crosses. Between these patterns occur several examples of a ' sun ' or ' eye ' motive, consisting of a dot in a circle which is fringed with a number of short lines (FIG. 4).

4. From tomb in Cava della Signora necropolis, Castelluccio. Length, 8 cm., with six oval bosses. It is broken and so badly worn that the decoration cannot be

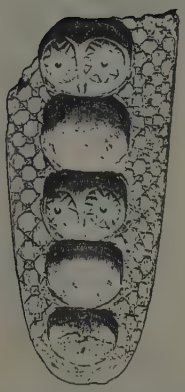

FIG. 3. CASTELLUCCIO
Length, 5.5 cm. (2¼ inches)

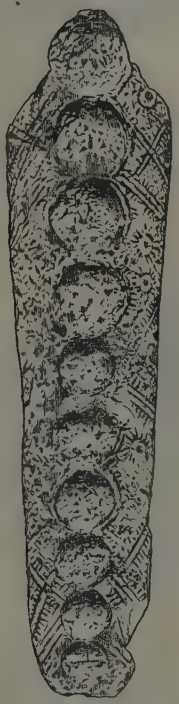

FIG. 4. CASTELLUCCIO
Length, 10.5 cm. (4¼ inches)

made out, except on the fifth of the surviving bosses, where it appears to consist of two sets of curved lines, each isolating a portion of the oval boss, in the centre of which is placed a single dot. This may be a simplification of the oculus motive which occurs on No. 1.

5. From Tomb 13, Cava della Signora, Castelluccio. Length, 16.5 cm. A very fine example, found by Orsi during his excavations. Eleven bosses survive, and there is a trace of the twelfth where the object is broken at the bottom. Of these the first carries an oculus motive, the third a double ' star ' or ' flower ' motive, and the fifth a pattern consisting of two groups of three curved lines, each cutting off a segment of the oval, within which in each case are set two dots, one vertically below the other, and three short

horizontal lines. The next three bosses are too badly worn for any decoration to be made out, if it existed, but the ninth and eleventh bosses have the ' dot and cross ' motive. There is a single line surrounding the bosses and the rest of the surface is covered with a reticulated pattern with small cut-out squares where the lines cross (PLATE IV, left).

6. From Tomb 13, Cava della Signora, Castelluccio. Length, 5.5 cm. From Orsi's excavations. A fragment consisting of the top portion only, with three circular, undecorated bosses. A single incised line follows the outline of these in the usual way, but the rest of the background decoration is abnormal. It is irregular, consisting partly of lines on which are set rows of triangles with criss-cross hatching, partly of double

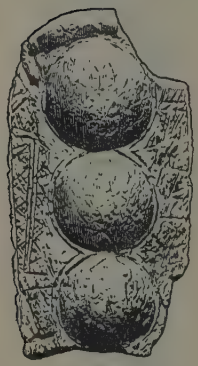

FIG. 5. CASTELLUCCIO
Length, 5.5. cm. (2⅛ inches)

FIG. 6. CASTELLUCCIO
Length, 8.5 cm. (3⅜ inches)

triangles joined at the apexes, and sometimes divided into smaller triangles, some of which may be cross-hatched. There is also a star or flower motive (FIG. 5 and PLATE IV, right).

7. From remains of village above necropolis, Castelluccio. Length, 8.5 cm. A fragment, consisting of the upper portion only, it has five bosses, the first, third and fifth of which are decorated with the oculus motive. The background is filled with a reticulated pattern with lozenges, identical with that of No. 1 (FIG. 6).

The next example from Sicily was first published by Orsi in 1906, though it had been known for some years. It was found in Grotta Lazzaro, in the Cava Lazzaro cemetery, near Modica. The Siculan I tomb known usually as Cava Lazzaro, which has its semicircular façade carved with decorated pilasters, is situated nearby.

8. From Grotta Lazzaro, Cava Lazzaro, near Modica. Length, 11.7 cm. Has eight circular bosses, is broken at the top and perhaps also at the bottom. A hole is

pierced on the right-hand side of the uppermost boss and on both sides of the bottom one, perhaps for mending it when broken. Only two of the bosses have visible decoration, this being in one case a cross, and in the other what Orsi describes as a ' doppio fulmine ', which he regards as a new motive. The background is covered with what appears to be an exceptionally roughly-drawn reticulated pattern. This example is much less carefully finished than most of the Castelluccio ones.

Twenty years elapsed before Orsi published the next two objects of this class, which are up to now the last that have been found in Sicily. They come from the little Siculan I settlement ' alle Sante Croce ', near Comiso, and its adjoining necropolis.

9. Sante Croce, from Tomb 3. Length, 6.8 cm. A fragment, broken at both ends. It has five oval bosses, the first and fifth being decorated with an unusual pattern

Fig. 7. MALTA

consisting of two sets of arcs facing in opposite directions, the space which they enclose being in each case filled with two short horizontal lines. On each side of the bottom boss a hole is pierced, probably for mending purposes. The bosses are surrounded by a single line, and the background decoration consists of alternating groups of three parallel horizontal lines, and one horizontal line sandwiched between two zig-zag ones.

10. Sante Croce, from Hut 2 of Village. Length, 6 cm. (No. 33086). Broken, lower half only survives. Has five bosses, all undecorated. Traces of reticulated pattern on background.

Malta

A single example of a bossed bone object came to light in Malta in 1918, during the excavation of the Tarxien temples[4]. It corresponds closely in form to the Sicilian examples, being made on a split long-bone, and having thus a V-shaped section, but it is

[4] Sir T. Zammit, ' Third Report on the Tarxien Temple Excavations ', *Archaeologia*, vol. lxx, 1918–20, p. 195 and fig. 19, and idem, *Prehistoric Malta*, 1930, p. 93 and pl. xxv.

more roughly-carved than any of the Sicilian examples. It is 5.5 cm. long, broken off at both ends, and has five bosses. There is no trace of decoration either on the bosses or the rest of the surface. The find-spot and the circumstances of the finding were not specified in the published reports, but it appears from Zammit's diary of the excavations[5] that the object was discovered in an ashy layer which appeared above the torba floor in the area marked SS on his plan, the space between the first temple of the main block and the small, much destroyed Eastern one. The notes further state that in addition to Neolithic sherds of the 'best' (i.e. the latest, or I c type) the ashy layer yielded two 'unquestionably Bronze Age' sherds and three clay spindle-whorls of Bronze Age type. The exact context of the find therefore remains uncertain (FIG. 7).

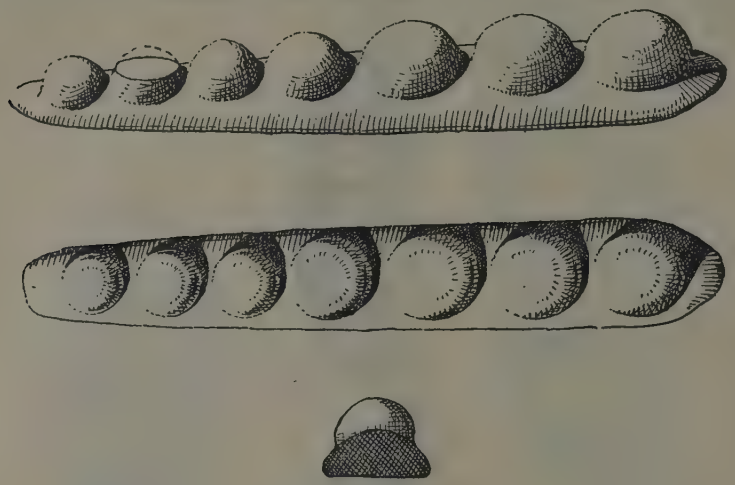

FIG. 8. LERNA, 1953. BONE. Inv. L3.11
Drawing by Piet de Jong, 1955. ± full size. (L3.11 first published *Hesperia*, XXIII, 1954, p. 22)

GREECE

1. Lerna. The excavations conducted at this site during 1952–3 by the American School of Classical Studies produced a single example of a bossed bone object, the first to be found in Greece[6]. It is 10.6 cm. long, with seven circular bosses, and is undecorated. It differs notably from the Siculan and Maltese examples in form, being a solid strip of bone with a flat, polished base. There is no suggestion of a V- or U-shaped section (see FIG. 8), and in this it resembles all but one of the Trojan examples. There is no trace of decoration. For once the context is clearly established. It was found in Trench B, 'in the earliest floor deposit that contained grey Minyan ware, and immediately

[5] This unpublished diary is the property of the excavator's son, Mr C. G. Zammit, the present Director of the Valletta Museum, who has very kindly allowed me to consult it. For classification of Maltese pottery, see J. D. Evans in *P.P.S.*, XIX, pt. 1, pp. 41–94.

[6] John L. Caskey, 'Excavations at Lerna, 1952–53', in *Hesperia*, vol. XXIII, No. 1, Jan.–Mch., 1954, p. 22 and pl. 9, g. Mr Caskey has also kindly furnished me with further details about this object, in correspondence.

above a stratum in which only Early Helladic pottery occurred'. Its relative date is thus fixed as the very beginning of the Middle Helladic period (FIG. 8).

2. The only other find from Greece as yet which may possibly be related to the objects here studied is one made recently in Prof. Wace's excavations at Mycenae[7]. It is a strip of hard red clay, 5 cm. long, 15 cm. wide and 7 mm. thick. It is slightly curved longitudinally, the edges of the section are rounded, and there are two knobs on the upper and lower surfaces. Found on the surface in the area between Tsountas' House and the South House, this object differs widely in many respects from all the others dealt with here, and it quite probably represents something quite distinct (FIG. 9).

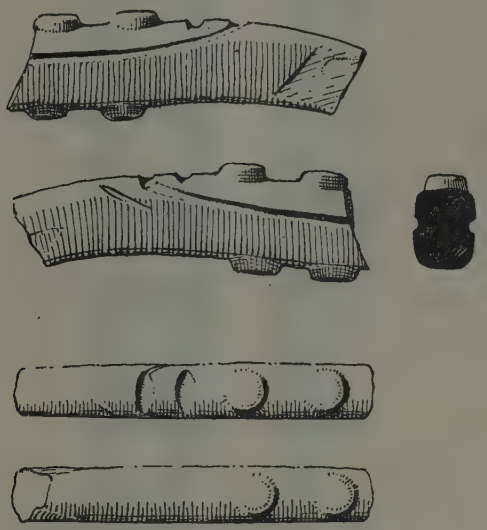

FIG. 9. MYCENAE

ANATOLIA

The remaining specimens are all from Troy, and all but one very doubtful example come from Schliemann's excavations. All consist of solid strips of bone and are normally flat-based. The one exception to this is no. 2, which has a moderately U-shaped section. There is never any decoration on the bosses. The evidence as to the circumstances of discovery and chronological position of the Trojan bossed objects has been admirably presented by Bittel[8], whom I follow in this account.

1. The largest, and (from above) most like the Sicilian objects[9]. Length, 13.2 cm. Nine circular bosses. The base is flat. The top of the first boss is damaged, but the object is otherwise complete. Two holes are pierced at the top end, and one at the

[7] I have to thank Prof. Wace for very kindly supplying the information about this unpublished object from his excavations at Mycenae.

[8] See note 2 above.

[9] Schliemann, *Ilios*, p. 573, Nr. 983; Virchow, *Zeitschr. f. Ethn.*, vol. 23, 1893, pp. 410 ff.; Bittel, ibid., pl. 5, 3.

bottom. The bosses are surrounded at the base with a fringe of small triangles, the apexes pointing outwards. The background is further decorated with three curved parallel lines consisting of similar triangles. The bosses themselves are plain. Schliemann attributes it to the 3rd (burnt) city, which is equivalent to what is now known as later Troy II, and Virchow says it was found at a depth of 26 to 33 ft. However, this is simply the depth of deposit in this layer, and it is apparent that he was not speaking from personal observation.

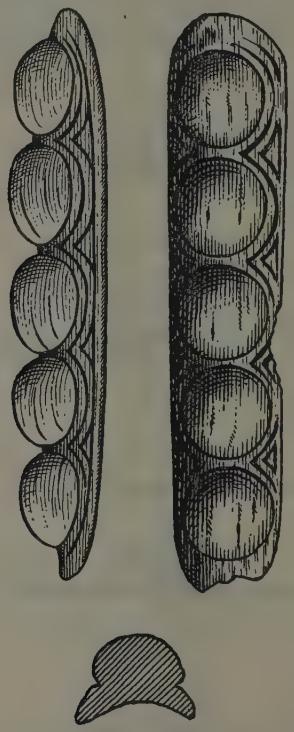

FIG. 10. TROY

2. A shorter, but equally broad plaque with five circular bosses[10]. Length, 9 cm. The base is slightly concave and the upper surface is decorated with two incised lines which follow roughly the outlines of the bosses. It is reported as coming from ' Temple A ' (the largest megaron), having been found, apparently, in Squares D/E–4/5 of Dorpfeld's plan, which makes it likely that it also belongs to the later phase of Troy II. Bittel states, however, that not all the five objects which Schliemann describes with it can really belong to Troy II. He takes especial exception to an ivory knife-handle carved with an animal head (pig ?) (Troja, 124, Nr. 40) and compares it with another illustrated in *Ilios*, 472, Nr. 517, which is attributed to Troy III (FIG. 10).

[10] Schliemann, *Troja*, p. 125, Nr. 41 ; Virchow, ibid., pp. 410 ff. and figs, 8–10 ; Bittel, ibid., pl. 5, 1.

3. A longer example, tapering at both ends, with seven bosses, all roughly circular, except for the bottom one, which is distinctly oval[11]. Length, 11 cm. The underside is flat or slightly convex, ' like the runner of a sledge ' according to Schmidt. The breadth of the bone narrows slightly towards the upper surface. The object is quite devoid of decoration, though there is a long, deep nick (probably accidental) in the first boss. According to Dörpfeld (quoted by Bittel) this example was found in the passage-way through one of the defensive towers (the tower FL) built in the earlier part of Troy II. It lay near a wall built to block this passage in the later part of the same period. However, since the depth at which it was found is not recorded, and since this portion of the wall was re-used at the time of the 3rd city and later still, it is not possible to be absolutely certain that it belongs to Troy II.

4. During the American excavations at Troy a broken bone object was unearthed which has some slight similarity with the bossed bones[12]. It is a rectangular strip of bone, length 5.6 cm., broken at one end, and thought to be part of the shoulder-blade of some animal. The upper surface is broken by three evenly spaced raised disks, each bearing two incised concentric circles which enclose a central dot. The surface is carefully finished. This object was found in Room 209, in a deposit assigned to Troy II g. The excavators suggest that it is possibly a piece of inlay from a small box or other such object. If so, this makes it highly unlikely, for reasons which will be adduced later, that it has any connection with the other bossed bone objects. The resemblance is in any case not close.

It will be seen that, though the weight of probability is on the side of the Trojan plaques all belonging to some phase of Troy II, there is some uncertainty as to their chronological position, and some at least could belong to Troy III or even later.

From the foregoing it is obvious that the ' bossed bone plaques ' fall quite neatly, as regards their form, into two geographical groups, an Eastern (Troy and Lerna) and a Western (Sicily and Malta). The Eastern examples have a solid body with a normally flat, though in one case slightly concave base, whilst the Western ones, made from split long-bones, have all a strongly V- or U-shaped section. This major difference is supported by other differences of detail. The Western examples are distinctly larger in size and have a greater number of bosses than the Eastern ones. In the latter the bosses are circular and plain ; in the Western group they are generally oval and often bear decoration of a peculiar type. The Sicilian examples have elaborate and highly developed background decoration, as contrasted with the simplicity or absence of this feature on the Trojan examples. The conclusion to which one is inevitably drawn is that there is no longer any possible reason for not treating the Sicilian ' plaques ' as an integral part of the Siculan I (Castelluccio) culture. No member of the Eastern group resembles them closely enough to warrant the import theory. I shall consider the status of the Malta one later but it is equally obvious that this, too, cannot be an import from the East. Once this is admitted the value of these objects as a chronological link between the cultures of the eastern and western basins of the Mediterranean is immensely diminished, if not entirely annihilated.

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[11] Dörpfeld, *Troja u. Ilion*, 1, p. 391, fig. 376; H. Schmidt, *H. Schliemanns Sammlung trojanische Altertümer*, p. 291, Nr. 7953 a/b ; Bittel, ibid., pl. 5, 2.

[12] Blegen, *Troy* 1, p. 363 and fig. 365, 35–528.

They cannot, however, for that reason, be dismissed as unimportant or without significance. The similarities, even in detail, are considerable, and could hardly be accidental. The long single row of bosses, the tapering off towards one end, the retention of the curved parallel lines of the Trojan decoration in the more elaborate Sicilian decoration—all these and other details add up to a significant resemblance. To them one may add the lack of an obvious utilitarian purpose (none of the suggestions so far is even moderately convincing), which reduces the likelihood of their being the product of similar needs. If they are decorative or cult objects, then their true importance is likely to lie in the pointer which they may give us to ethnic movements and migration from the East to the Central Mediterranean.

Our conclusions in this matter will of course depend on the problem of the origin of the Castelluccio culture itself. We must not advance a theory on the evidence of the ' plaques ' alone ; but if it can be shown that the indications which they give agree with those provided by other aspects of the culture, then we shall have added a valuable new piece of evidence.

The Castelluccio culture is intrusive in Sicily. It has no connections with the aboriginal impressed ware culture of the island, nor can it have arisen from earlier intrusive groups (i.e. Serraferlicchio and San Ippolito)[13]. There is definite evidence that it began its expansion from a ' bridgehead ' somewhere in the Syracuse region of S.E. Sicily, the area which has produced all the ' plaques '. Orsi, the discoverer of the Castelluccio culture, regarded it as having come to Sicily from the East. Peet[14] and later Frankfort[15] compared the patterns painted on the Castelluccio pottery with those of some of the Chaeronea ware of N. Greece. More recently Bernabò Brea has been very assiduous in pointing out East Mediterranean (chiefly Greek and Aegean) parallels to various elements of the Siculan I culture. In particular, he has drawn attention to the very close similarities between the painted pottery and the matt-painted fabrics of the Cyclades and Middle Helladic Greece[16]. The resemblances are in technique, colouring of the wares and paint, decorative motives, and finally the shapes of vases themselves. Finally, Lord William Taylour has recently claimed to have identified an actual Middle Helladic vase from a Siculan I site, besides a number of M.H. matt-painted fragments from the corresponding layer of the Lipari Acropolis[17].

It will be remembered that the ' plaque ' from Lerna was found in the earliest layer of the deposit which produced Middle Helladic sherds. No mention is made of matt-painted sherds, but matt-painted pottery is found in the later Middle Helladic levels of this site. At least these two elements of the Castelluccio culture have been drawn nearer together in its possible homeland, and it is now quite possible to envisage further ' plaques ' being found actually associated with matt-painted material.

The exact relationship of the Lerna ' plaque ' itself to the Trojan ones is at present an obscure problem, and one which is unlikely to be satisfactorily solved until we have

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[13] See L. Bernabò Brea, *La Sicilia prehistórica y sus relaciones con Oriente y con la Península Ibérica, Consejo Superior de Investigaciones Científicas, Serie arqueológica*, I, Madrid, 1954, pp. 172 ff.

[14] *Stone and Bronze Ages in Italy*, p. 217, and fig. 84.

[15] *Studies in the Early Pottery of the Near East*, II, p. 132. His mention on the previous page of a ' bossed bone plaque ' from Portugal seems to be due to a misunderstanding of Childe, *Dawn*, 1st ed., p. 96, which refers to the bone pommels from Nora in Portugal and Monte Sallia in Sicily.

[16] Brea, ibid., p. 177.

[17] In his unpublished thesis on ' Mycenaean Pottery in the West '.

more examples from Greece. The details correspond closely enough with the Trojan ones to make it not absurd to regard it as a direct import from Troy. The dates can easily be made to fit. On Bittel's evidence some at least of the Trojan ' plaques ' could belong to Troy III or later. The Lerna plaque is on the borderline between Early Helladic and Middle Helladic and datable at latest to not much after 1900 B.C.

However, it seems intrinsically much more likely that the Lerna ' plaque ' is to be treated as an integral part of the culture-assemblage in which it was found. Unfortunately, however, the stratum in which it appeared seems to have been a transitional one (containing, apparently, Early Helladic as well as Middle Helladic sherds), leaving us in some doubt as to which of these stages we are to attribute it to. Both the matt-painted and Minyan wares of the M.H. period have Anatolian affinities, Minyan in particular being well represented at Troy itself. Unfortunately, though, it does not appear there until V c, which is probably if anything, later than its appearance in Greece, besides the fact that there is nothing to associate ' bossed bone plaques ' with Troy V. The affinities of matt-painted wares, on the other hand, are (*via* the Cyclades) with Central Anatolia rather than with the Troad. On the whole the Early Helladic culture is the most promising candidate, for it has affinities with the cultures of Troy I and II and of Thermi[18]. This is the right part of the world and the right period, but it is too early to draw any firm conclusions as yet.

However, one piece of evidence which may have a bearing on the matter comes from an unexpected quarter. We have not yet considered the problems raised by the example unearthed in Malta. With which of the local cultures are we to associate it ? Is it a local product or an import from Sicily ? As we have seen, the deposit from which it came contained sherds of Period I c (Late Neolithic) type, plus one or two sherds and a few spindle-whorls of ' Bronze Age ' (i.e. Tarxien Cemetery) type. The bone object may therefore equally well belong to either of these assemblages. In form it closely resembles the Sicilian examples, though it is more roughly carved than any of these, and without a trace of decoration. If we take it to have come into the deposit with the Period I sherds, I think we must hold it to be an import, since it is quite unparalleled in the very large quantity of material from the Maltese temples.

But there is another possibility. If it belongs to the Bronze Age (Tarxien Cemetery) assemblage, it could then conceivably be a local product. The Tarxien Cemetery culture, like the Early Bronze Age culture of Lipari, and like Castelluccio itself, has a Helladic basis. In the form in which it came to Malta (almost certainly from S. Italy, where considerable traces remain, and where it may have been developing for some time) it displays a considerable mixture of Early and Middle Helladic traits. Among the latter we may include the motives of the pottery decoration, though the basic shapes of the pots, as well as the technique and finish, seem rather to go back to Early Helladic roots. It is therefore conceivable that among these Helladic traits might be included the manufacture of ' bossed bone plaques ', though we must always keep in mind that either the idea, or the object itself, might have been acquired by them in later contact with the Castelluccio people in Sicily. On the whole, it is better to reserve our judgment on this question also until such time as further evidence is forthcoming.

One question of fundamental importance remains to be discussed—the purpose and meaning of these strange objects. The principal suggestions put forward so far are

[18] Especially in Central Greece, though other elements are also present. Cf. Childe, *Dawn*, 5th ed., p. 66.

those of E. Petersen, Orsi and Schliemann[19]. The former suggested that they might be bone coverings for dagger sheaths, the two latter that they might have been used as inlay on small caskets. Neither is very satisfactory; only the Western examples will fit the first theory, whilst neither group is of a very convenient shape for the purpose which Orsi suggested. I believe that we are dealing with a group of non-utilitarian cult objects, the nature of which seems to me to be settled once and for all by the decoration present on the bosses of the Sicilian examples. This decoration establishes that they are simply another and unfamiliar stylization of the familiar female oculus idols which are so common all over the prehistoric Mediterranean[20]. For instance, in No. 1 from Castelluccio (FIG. 1) the decoration on the first boss represents, as was pointed out, a pair of eyes, that on the 5th boss probably breasts, the single dot on the 9th the navel, whilst the motive on the 11th is probably an indication of the female organ. What the decorations on the 3rd and 7th signify it is more difficult to say; probably they are variations on the breast motive. This scheme is substantially repeated on most of the other Sicilian examples. The same order is always preserved. The eyes come always on the first boss, then the breasts, navel, etc., in that order. Any of these motives may, however, be repeated once or more times before passing on to the next one—e.g. FIG. 6 (the eyes), FIG 3 (breasts), etc. Of course, this type of decoration is confined to the Sicilian examples, but since they all appear to be related, and since no obvious other use can be suggested for the remaining ones, I think it is fair to suggest that the meaning of the undecorated ones is substantially similar to that of the decorated examples. At any rate it may be provisionally adopted until a better explanation is forthcoming.

What suggested the peculiar shape of these objects we shall probably never know[21], but there are many illuminating parallels, both in the East Mediterranean and further West, to the decoration on the Sicilian ones. This decoration relates the objects to the oculus idols of Mesopotamia, N. Syria, Cappadocia, Cyprus and the Troad[22], which form a group of more or less closely related types, with its origin probably in the N. Syrian–Mesopotamian area. It is impossible here to do more than indicate briefly some of the more striking points of resemblance. Striking parallels for the duplication of the eyes can be found among the oculus idols found by Mallowan at Brak (*Iraq*, IX, Pt. 1, pl. LI, nos. 40, 41 and 48). In the case of No. 48 it is simply a question of one idol superimposed on another, but Nos. 40 and 41 present us with the outline of a smaller idol drawn inside the contours of the larger one. That this may be intended to represent a mother and child is evident if we consider the related plank-idols of Cyprus. These are sometimes represented as holding a child—or even two (see *Swed. Cypr. Exp.*, Plates, vol. 1,

[19] E. Petersen, 'Funde u. Forschung', in *Roem. Mitth.*, XIII, 1898, p. 165; P. Orsi in *Ausonia*, 1, p. 6; Schliemann, *Ilios*, p. 514. Orsi and Virchow also suggested that they might have been portions of dagger-hilts.

[20] I formed this opinion when I first saw the objects in the Syracuse Museum three years ago, and was very much pleased to discover later that Dr O. G. S. Crawford had come independently to the same conclusion.

[21] Prof. Childe has pointed out to me that there is a certain resemblance to some gold objects from the Royal Tombs at Alaca Höyük; see H. Z. Koşay, 'Les Fouilles d'Alaca Höyük, 1937–9', *Türk Tarih Kurumu Yayinlarindan*, Seri v—no 5, plate clxxxvi, top. It is difficult to say at present whether this is significant or not.

[22] Mallowan, *Iraq*, IX, Pt. 1, pl. li and text; H. Bossert, *Altanatolien*, figs. 333–47; *Swedish Cyprus Expedition*, Plates, vol. 1, pls. xviii–xx, xxv, xxvi, xxx, and *B.S.A.*, XLI, p. 83, figs 4 and 5; Schliemann, *Ilios*, *passim*, but especially p. 262, Nr. 141 and p. 425, Nr. 521, and Blegen, *Troy*, 1, Plates, fig. 216, 37–374.

pl. xix, 13, pl. xxvi, 40, pl. xxx, 28, and *B.S.A.*, XLI, p. 83, fig. 5, nos. 15, 201). A more stylized version of this, very like the Brak one, is to be seen on some of the Kültepe idols, e.g. *Altanatolien*, fig. 340 (two children ?) and fig. 341 (one child lying on its side). However, it is doubtful if we can interpret *Iraq*, IX, pl. li, no. 48, in this way, since it seems to consist rather of one idol set above another, and this may be simply an alternative to the lateral juxtaposition of two or even three figures which we also meet in the idols from Brak, as well as in those from Cappadocia and Cyprus. It is this idol which offers the closest parallel to our Sicilian one.

Miss Lamb has traced the origin of the Trojan face-urns and oculus idols back through the Cappadocian and Cyprus groups to Syria and Mesopotamia[23]. One of the Trojan idols, in particular, is a perfect miniature version of a Cypriote plank-idol[24]. However, though the oculus decoration is thus brought into close proximity with ' bossed bone plaques ' at their source, we have no evidence of its transference to them at this point, and particular parallels with the Sicilian decoration, such as repetition of the eyes, etc., do not occur on the Trojan oculus idols.

In the West the best parallels to the ornament on the Sicilian bossed idols are to be found in Spain. The decorated phalange-idols of Almeria and Portugal offer some similarities, particularly in the treatment of the eyes (*Archiv. Arqu. Lev.*, vol. II, p. 120, fig. 7, nos. 1–4, though in some ways the larger painted bone idols of Almizaraque (*Archiv. Arqu. Lev.*, vol. II, pp. 122–3, figs. 8 and 9), and their analogues from various sites in the Valencia region (*Archiv. Arqu. Lev.*, vol. II, pls. i–iv), some including the feature of repetition of the eyes (e.g. *Archiv. Arqu. Lev.* vol. II, fig. 8, nos. 6 and 7, and pl. iii, 15). Perhaps the best parallel of all, which is related to the latter group, is the magnificent antler example, made from a split tine, which comes from the Ereta del Pedregal (Navarrés), (ibid., pl. v, 1, a and b), which incorporates both repetition of the eyes and a semicircular section. The bossed bone idols have also been compared (by the Abbé Breuil)[25] with a curious stone idol from Barradas, Portugal (*Peint. Rup.*, IV, fig. 70, 6) and others from S. Martinho de Cintra and Palmella. The former provides the best parallel ; it is semicircular in section, tapering towards the bottom, and possesses an eye motive at the top which considerably resembles some of the Sicilian ones. It is, however, of limestone, and considerably larger and heavier than any of the others discussed.

The conclusions to which this discussion has led are then as follows ; the ' bossed bone plaques ' of Sicily, and in all probability the related ones of Malta, Greece and Troy, are neither more nor less than a variant of the ubiquitous Mediterranean oculus idol. The Western examples are not imports from Troy or anywhere else in the East Mediterranean, but were almost certainly made on the spot by people who had migrated thither from some part of Greece or the Greek islands. Whilst their utility for the establishment of synchronisms between the East and West Mediterranean is thus reduced to a minimum, they become valuable links in the chain of evidence for the migration itself, and may ultimately, if further examples are discovered, help us to trace its routes and locate more exactly its point of origin in the East Mediterranean.

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[23] W. Lamb, *B.S.A.*, 1951, pp. 75–80.

[24] Schliemann, ibid., p. 425, Nr. 521.

[25] *Les Peintures Rupestres Schématiques de la Péninsule Iberique*, IV, p. 122 and fig. 70.

Greek Roads in South Attica*

by J. H. Young

The Johns Hopkins University

' Although the Greeks seem to have undertaken the founding of their cities most successfully looking for beauty and security of position, harbours, and fertile country, the [Romans] planned best those matters which the Greeks made light of, laying down roads, and bringing in water . . . They laid a network of roads over the countryside, adding cuttings over the hills and embankments along the valleys, so that their wagons can accommodate whole shiploads '.

So says Strabo (v. 3.8), stating concisely a great deal that has since been written contrasting the beauty-loving Greeks with the practical Romans. The justly admired roads of the Romans have long been a symbol of Rome at her best. The Greeks come off very poorly indeed when contrasted with Rome in the matter of road-building—so poorly that their apologists have often felt constrained to explain it away : the mountain-terrain, and the division into unco-operative city-states were hostile to the development of road-building. Yet both these excuses are groundless, for under certain circumstances the Greeks did build roads over difficult terrain and across state boundaries. Roads from quarries to temple-sites are good examples of the first difficulty overcome, sacred roads of the second. The truth is that the Greeks could build good roads if the need for them was sufficiently compelling, but they had no sense of the ROAD, as the Romans did, and as we do to-day.

We can predict quite easily where these Greek roads will be found. Thus, in Attica we can be sure that one such road will be the Sacred Way to Eleusis, and another a road from Mt. Pentelikon to Athens. The first of these has been found and studied[1], while the second urgently requires investigation. And we know a third area which would demand good roads : the silver-mining region of Laurium. The transport of this silver to Athens was enormously important, and the weight of wagon-loads of silver ingots made roads, and good roads, imperative. And roads we find—a great and perplexing network of them, which offer an excellent opportunity to study the various methods used by Greek road-builders.

The commonest kind of road in Greece, and the simplest to make, is what I call the TRACK road. Whenever a road must run over rough rock—and this, in Greece, is very often—a pair of channels was cut, spaced to accommodate the wheels of a wagon. Most travellers in Greece have seen such cuttings, which are, in effect, similar to railway tracks, even to the use of switches for intersections. The Greek engineer Despotopoulos has carried out an extensive study of these, chiefly in areas where they can be traced in long stretches. At Laurium, they often occur only where there is an outcropping of very uneven rock ; otherwise, the second method, described below, was used. One might suppose that such tracks would demand standard specifications for the wagon-wheels, although I doubt whether anyone who knows the Greeks at all well would

* This paper, in a slightly different form, was read at the 56th General Meeting of the Archaeological Institute of America ; an abstract appears in *A.J.A.*, 59 (1955), p. 175. Two good studies of Greek roads may be cited : the one by E. Curtius in *Abhandlungen Akad. Berlin*, 1855, the other by Th. Despotopoulos in *Technika Chronika*, 17 (1940), pp. 329 ff.

[1] Travlos in *Praktika*, 1938, pp. 25 ff.

seriously entertain such a notion. Despotopoulos found that the width between tracks in Attica was less than in Boeotia and the Argolid; even at Laurium we find some variation. Here are three examples from the mining region:

Between Outer Edges	*Between Inner Edges*	*Width of Cut Track*
1.64 m.	1.42 m.	0.22 m.
1.54 m.	1.42 m.	0.12 m.
1.65 m.	1.36 m.	0.29 m.

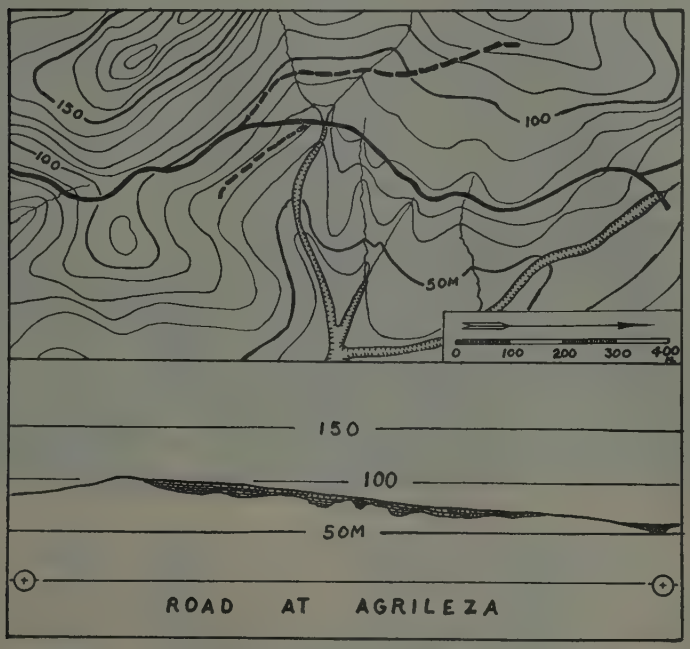


FIG. 1

Despite the differences, the same wagon could have negotiated all three, and probably also those examined by Despotopoulos at the Dipylon in Athens and on the Sacred Way, where he found the median average spacing to be 1.45 m. (4 feet 9 inches).

When a road progressed over smooth rock, a different treatment was employed, which I name the GROOVED road. Here a series of shallow grooves, at an angle to the course of the cart-wheels, were chiselled to afford purchase, especially on a slope. Similar grooves may be seen in the ascent to the Athenian Acropolis.

Where Greek roads ran over earth, no preparation was considered necessary; the packing down of the dirt by the constant passage of wagons sufficed. Such ancient roads are naturally hard to find, yet may sometimes be traced by a single row of large blocks half-sunk along the lower side, which held the earth against the winter rains and the downward pressure of many wheels. We may call this the PARTLY TERRACED road. The terracing-blocks must be carefully distinguished from those of boundary-walls, which (at Laurium) are marked by thin slabs set *on edge*.

Even when a dirt road traversed level ground and thus left no traces of its own, its course can often be detected by the débris of the tombs which commonly flanked ancient roads. Some of them are sure to have been rifled, and the tell-tale fragments of well-cut blocks and glazed pottery sometimes allow us even to date the long-vanished road.

None of the roads so far described could properly be called works of engineering. Only when the countryside became really rough was Greek mettle tested, and in the Laurium region there are some fine examples of its response in the CUT AND TERRACED

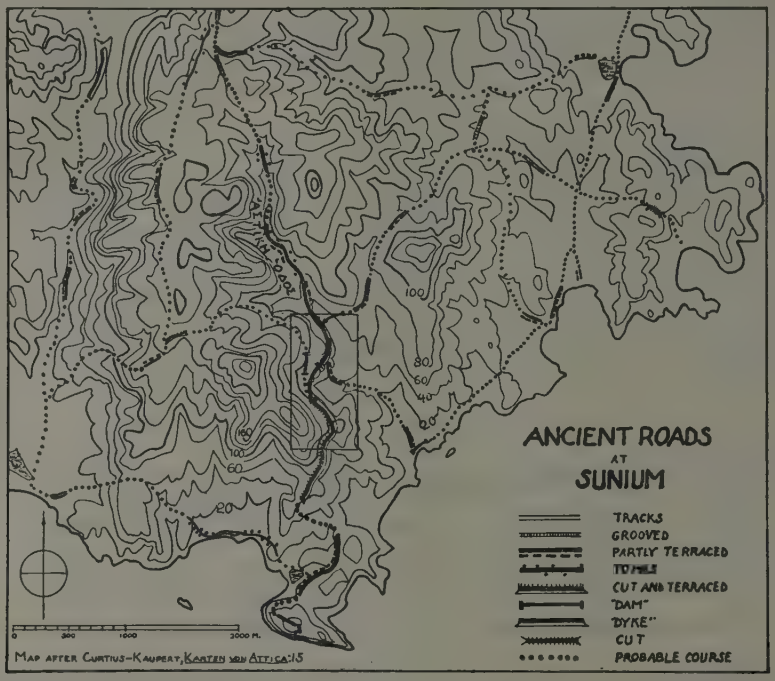


FIG. 2. (Inset shown on FIG. 1)

road, which follows the contours along a steep hillside. Here the method was to cut away the higher side and to use the stone thus quarried to terrace the lower. On very steep slopes, however, stone often had to be brought in from elsewhere.

Again, crossing a stream-bed required engineering of a sort, although in much of Greece bridges were rarely needed, since the streams are dry most of the year. Thus the road-builders used what I call (with apologies) the DAM road. At an appropriate place the road was carried across on a kind of dam, loosely enough constructed to allow water to seep through, yet of stones too heavy to be carried away by the winter rains. Construction of these dams varied. For a small slow-flowing stream, heavy field-stones were enough. When the stream was wider and more precipitous, the best possible place was sought out, and the dam was built of heavy, roughly trimmed blocks in regular courses (PLATE V, B). The deeply cut-up terrain in the rich mining region now called Agrileza

a. GRAVE-JAR, WITH COVER. YÜEH-TYPE CELADON
Height, 9 inches. Sung Dynasty

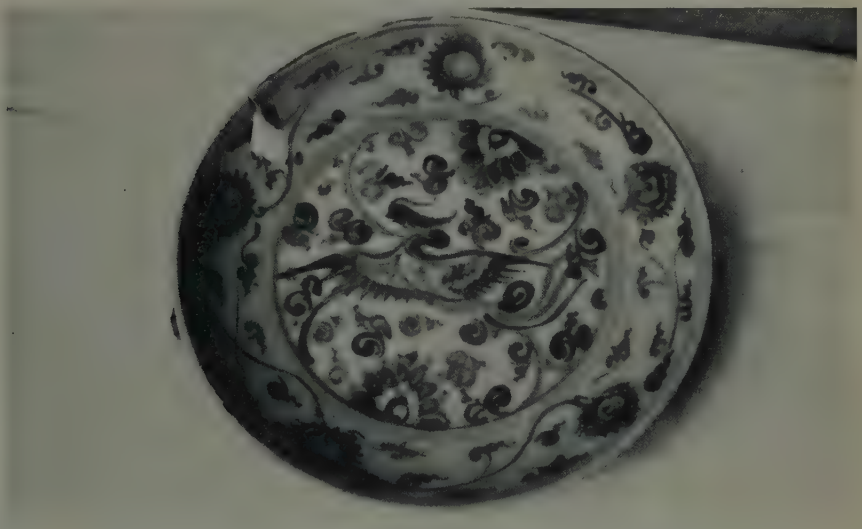
b. SIDE OF TRENCH CUT FOR FOUNDATIONS OF GOVERNMENT SERVICE INSURANCE BUILDING, MANILA, SHOWING UPPER LEVELS OF OCCUPATION OF THE PARIAN SITE
Ph. Michael Sullivan

facing p. 96

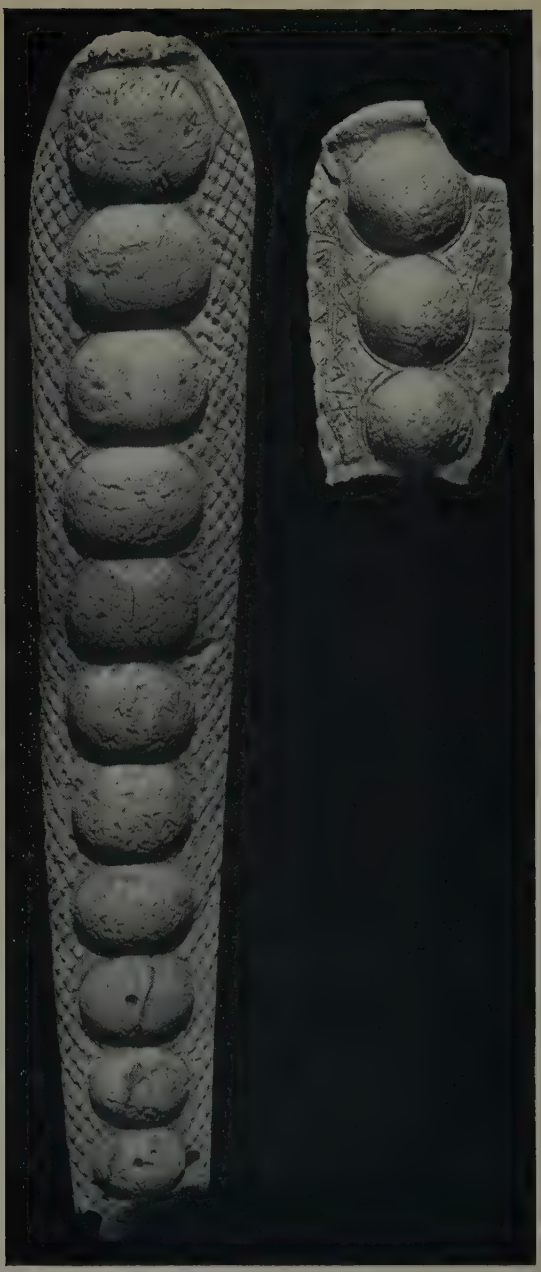
a. JAR, *MEI-P'ING* TYPE. A FINE NORTHERN CELADON SPECIMEN FOUND IN THE VISAYAN ISLANDS
Height, 10½ inches. Sung Dynasty

b. VASE WITH PEONY DESIGN, TZU-CHOU TYPE, FOUND IN CEBU
Height, 9 inches. Yüan Dynasty ?

a. DISH, DECORATED WITH *CH'I-LIN* IN UNDER-GLAZE BLUE. 'SWATOW WARE'
Diameter about 13 inches. Ming Dynasty

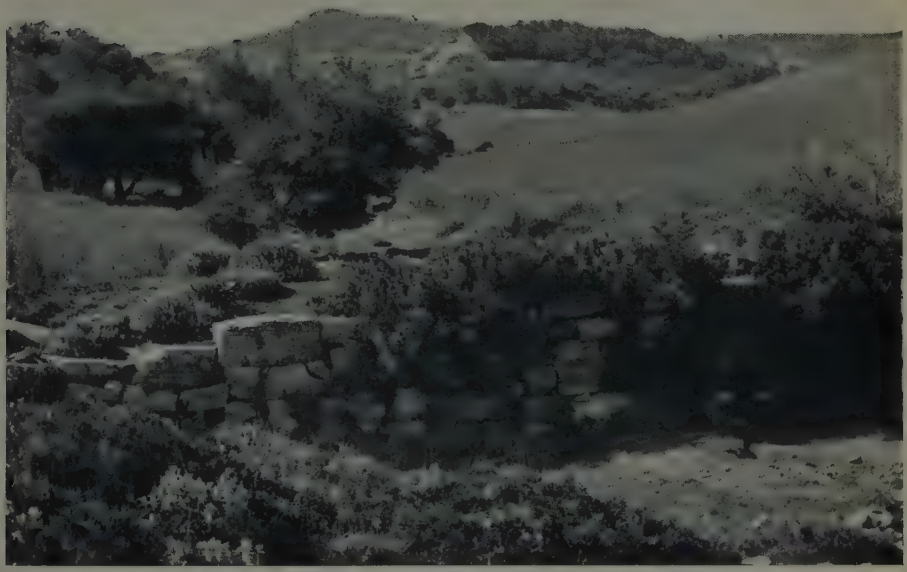


b. DISH WITH PHOENIX DESIGN IN UNDER-GLAZE BLUE, FROM VISAYAN ISLANDS
Diameter, 9¼ inches. Ming Dynasty



BOSSED BONE PLAQUE NO. 5 FROM TOMB 13, CAVA DELLA SIGNORA, CASTELLUCCIO, AND ON RIGHT ANOTHER (No. 6, FIG. 5) FROM THE SAME TOMB

a. DAM AND TERRACING OF GREAT ROAD AT SUNIUM
(plotted on FIG. 1, centre)



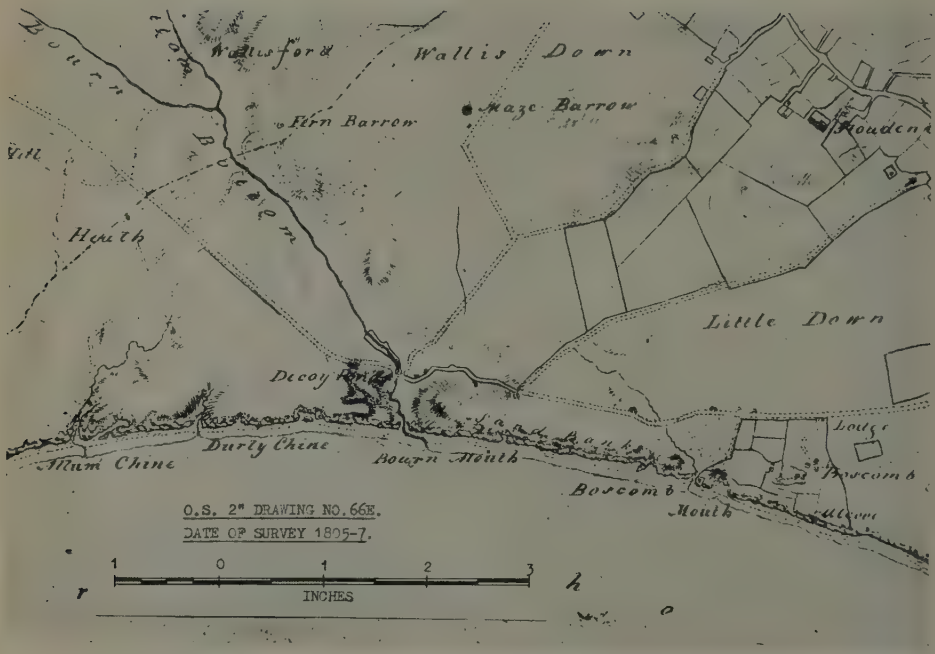
b. DAMMING OF STREAM FOR ROAD AT SUNIUM
(plotted on FIG. 1, extreme right)

PLATE VI

PALAEOLITHIC FEMALE FIGURINE CARVED OUT OF HAEMATITE
(Twice the natural size)

SCREW-HORNED GOAT FROM LA PALMA, CANARY ISLANDS

see p. 108)



THE SITE OF BOURNEMOUTH IN 1805–7 : ST. PETER'S CHURCH NOW STANDS IN THE ANGLE BETWEEN THE ROAD AND THE BOURN, EAST OF THE LATTER

(see pp. 109–10)

(FIG. 1) was the most serious obstacle to road-makers in our area. Here several stream-beds have cut into their limestone courses, while between them beds of harder schist rise up sharply. This area lies directly across the principal ancient road leading from Sunium to the north, which we should probably identify with the ἀστικὴ ὁδός mentioned in the *poletai* lists[2]. The whole section was traversed by a high curving road built of limestone blocks (PLATE V, A), which is one of the finest examples of Greek road-building I have seen. Since the quarries which furnished the marble for the second temple of Poseidon at Sunium lie on the course of this road, it must have been built at least as early as the mid-5th century B.C. Should the Greek solution of the problem appear precarious, we can only observe that it has held up very well for its first two and a half thousand years.

When a road *followed* the course of a stream-bed, it was sometimes carried along, high and dry, by a wall-like embankment running along one side; this we may call a DYKE road.

Greek roads, like modern railways, follow the contours of the land very closely. Unlike railways they usually prefer the high contours to the low, but they also avoid the direct crossing of a ridge. I have seen only one place where a summit was deliberately topped, and here it was done of absolute necessity. In this case, a CUT was made, and it is instructive to observe that when plotted on a modern map this cut falls precisely where the contours are lowest[3]. This road was probably built in the 3rd century B.C., when it became necessary to bring ore to the coast for smelting; the wood in the hills had been used up, and fuel was now imported by sea.

Before passing to some final conclusions about these Attic roads, we may well consider for a moment what kind of carts or wagons they served. The familiar Greek four-wheeled wagon or *hamaxa* could hardly have made its way through the cut tracks without wrenching off a wheel; what is required is a cart of stout construction which was *led*, not driven, and which we find shown on Greek vases[4]. One can picture such carts, laden with ingots or crude ore, crunching and squeaking along the roads of Laurium.

On the accompanying map (FIG. 2) I have shown the roads that I have traced in the deme of Sunium and its environs. This is only a part of the Laurium region, but we find all eight of the methods of road-construction described above.

Greek roads are of interest in several ways. To Curtius, they were a matter of general antiquarian interest; to Despotopoulos, they are a chapter in the history of engineering. My own interest has not been primarily in Greek roads at all, but rather in the deme of Sunium as a sub-division of classical Attica. To understand an ancient area, we must begin with a modern map; then, when we have lived some time in the region, we may know it as it is to-day. But if we are lucky enough, as I was at Sunium, to establish the courses of its ancient roads, we have taken a final and indispensable step toward looking upon our area from the point of view, and thus through the eyes, of antiquity.

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[2] I.G. II², 1582, 1, 116; it is probably also that in *Hesperia*, 19 (1950), p. 210.

[3] For a photograph, see *Hesperia*, 10 (1941), p. 178.

[4] Cf. that illustrated in Miss Lorimer's article in *J.H.S.* 23 (1903), pp. 132 ff.; the example on a familiar Cabeiric cup shown by her is better illustrated in Wolters-Brunn, *Kabeirenheiligtum*, pl. 11.

Coal in the Ice Age

The Excavation of a Palaeolithic Settlement at Ostrava-Petřkovice in Silesia*

by Bohuslav Klíma

Brno

THE high carboniferous sandstone formation named Landek, on the left bank of the Oder at Ostrava-Petřkovice, is the site of the most important palaeolithic settlement at present known in Silesia. The exploratory excavations carried out there in 1952, by the Brno Archaeological Institute of the Czechoslovak Academy of Sciences, were continued systematically the following year, particularly to determine whether coal had been intentionally used as fuel by the palaeolithic hunters.

The second season's excavations brought to light numerous particles of coke and coal in the ash layers which had resulted from the dispersal of hearths by solifluxion. Fragments of coal unaffected by heat were rare in comparison with the coke particles, indicating that the coal had been almost completely converted into the ash which colours the whole cultural stratum grey, especially near the hearths. While the discovery of coal is not, by itself, decisive evidence of its use as fuel, it is corroborated by the fact that the coal is found in various forms, and it may be concluded as a result of the 1953 excavations that 30,000 years ago, in the Ostrava-Petřkovice region, man used coal as a source of heat. This remarkable conclusion is more easily acceptable if it is borne in mind that the Ostrava coal-measures rise to the surface in the immediate neighbourhood of the site, and that the use of coal, though only as a material for ornaments, is known in other instances, e.g. at Kesslerloch, and at Kniegrotte. That the coal-fed fires reached high temperatures is shown by the considerable degree of incineration of the animal bone fragments (strongly resembling charcoal), which occur, together with particles of mammoth ivory, in the ash.

The excavated area (FIG. 1), some 1900 square feet, contained six concentrations of ash, representing hearths disturbed by solifluxion. They appear as greyish-black layers about one inch thick. Remains of the hearths themselves were preserved in bowl-shaped hollows, fired to a red colour. Near them were discovered multi-form shallow depressions, of the type frequently encountered on the periphery of Upper-palaeolithic hut sites, but it was not found possible to reveal by excavation the actual shape or construction of the shelters, on account of the considerable solifluxional and other soil movements. Circumstantial evidence, however, enables the plans of three huts (FIG. 1) to be traced with some probability. The evidence is threefold: the presence of hearths, the artificial preparation of the ground, and the concentration of stone artifacts, rare elsewhere, within the conjectured limits.

The huts are of an irregular oval shape, two hearths occurring on the longitudinal axis of each. No post-holes were found, and the precise tracing of the boundaries of

* The Editor wishes to thank Mr Paul Pollak for translating this article, which was first published in *Archeologické rozhledy*, VII, 1955.

the huts was further hindered by earlier excavations, which had disrupted the cultural stratum. Two round eneolithic pits also penetrated the palaeolithic level. Nevertheless, it may safely be assumed that the Petřkovice encampment consisted of artificial shelters similar in type to those discovered elsewhere in central and eastern Europe; e.g. at Dolní Věstonice[1], Pavlov, Kostjenki, etc. (see FIG. 3).

Particular attention was paid to the geological circumstances of the discoveries (FIG. 2). The settlement-stratum rests on weathered carboniferous sandstones (whose upper solifluxional levels are in several places separated by multi-coloured clays), and is itself markedly stratified and affected by solifluxion. Within the hut sites, however,

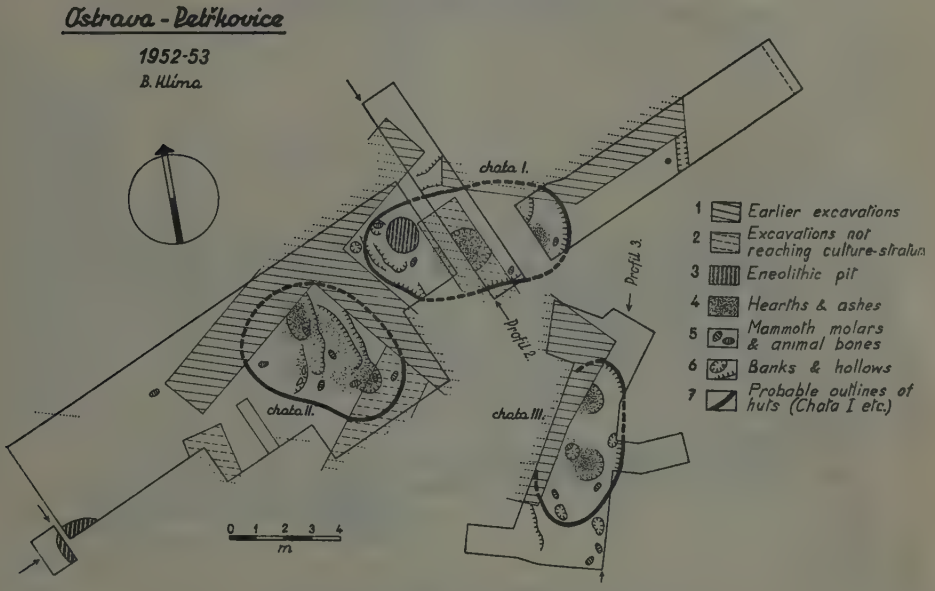


FIG. 1. PLAN OF PALAEOLITHIC HABITATION-SITE

the lower strata are peculiarly firm, and, as it were, tamped down. The thickness of the settlement-stratum varies: inside the huts it reaches some 8 inches, outside it forms a mere grey smear. It is overlain by two entirely decalcified loess layers, whose greatest ascertained thickness is 4 feet (FIG. 2, layers 2 and 4). The lower loess was subjected after its deposition to a period of intense cold, during which polygonal frost reticulations (fissures) were formed. Isolated fissures even penetrated through the cultural stratum to a depth of some 3½ feet, but were later filled by light grey gley and loess, washed down from a separate stratum of these materials which lies between the two main loess layers. The cross-section is capped by an indistinct layer of soil and fine coal-dust. The two loess layers form one deposit, that of Würm III. The stratum which separates them, exhibiting periglacial phenomena, corresponds to the cold peak. Similar cross-sections

[1] Described by Dr Klíma in ANTIQUITY, XXVIII, 1954, 4–14.

are already known, e.g. at Předmostí, Dolní Věstonice, and at Hranice. The cultural stratum itself (layer 6) dates from the interstadial period Würm II–III; its development was protracted, but ended well before the considerable soil-movements associated with the tundra phase at the beginning of Würm III had begun.

It is to these movements that the scarcity of well-preserved material is due. This is particularly true of bones, which are almost completely absent in the unworked state, and altogether so as artifacts. The discovery of nineteen poorly preserved mammoth molars, and of the calcined remains of bones from the hearths, nevertheless makes it

FIG. 2. OSTRAVA-PETŘKOVICE

Section of the excavations showing the cultural layer buried under fissured glacial deposits, some of the fissures penetrating into it. Scale in centimetres

likely that the settlement contained regular middens, in addition to bones thrown down at random by the fires. It was found possible to identify some of the bones as belonging to the mammoth (*Elephas primigenius* B), the horse (*Equus* sp.), and the reindeer (*Rangifer* sp.). The few charcoal fragments that were discovered were of pine (*Pinus silvestris*)—their usual place in the hearths is taken by fragments of bone and coal.

Relics of stone working were very numerous though confined to the vicinity of the hearths within the hut sites. The 1953 excavations yielded some 800 stone implements, and over 6,000 fragments of waste flint. Almost all the implements were made of flint derived from Baltic chalk formations, nodules of which abound in the local moraines; some crude implements were of erratic quartz material. The stone industry of Petřkovice is in some ways strongly Aurignacian in character, particularly in the manner of striking and retouching, but on the whole it must be classed with that found on Gravettian

sites. It is closely allied to that of Aggsbach in Austria, together with which it antedates Dolní Věstonice. Noteworthy are a series of points of the Kostjenki, Châtelperron, and La Gravette types ; also occasional leaf-shaped points with retouched surfaces, certain characteristic scrapers, microlithic blades with one trimmed edge, and ribbed blades. The chief discoveries were made on Hut-site III, which had sheltered a workshop. Between the hearths lay sundry cores, stone strikers, unbroken flint nodules, small pieces of slate bearing traces of use as retouchers, two flat working surfaces of sandstone, and very many flint chippings. An independent group was formed by some coarse chippings, a crude scraper, and a disc-shaped core, all of quartz.

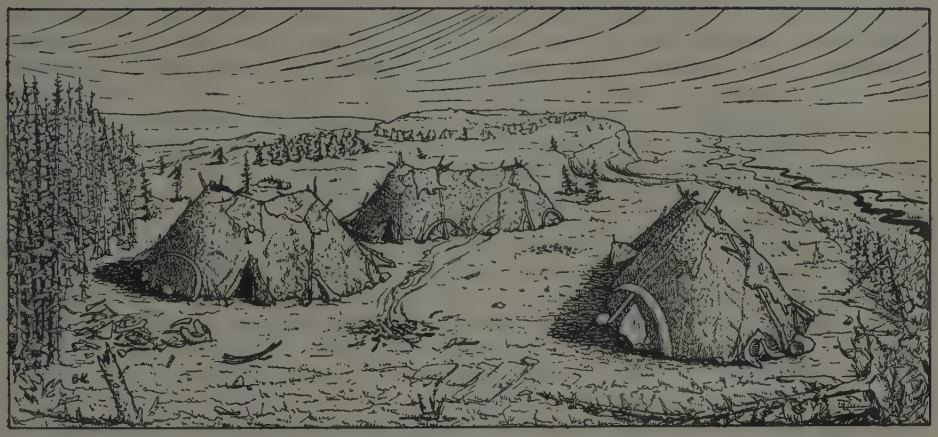


FIG. 3. PALAEOLITHIC HUNTERS' CAMP AT LANDEK (RESTORED)
on right the river Odra (Oder)

Numerous small lumps of haematite were discovered. This iron ore was baked to accelerate its decomposition into a form suitable for use as a red pigment. Some of the firmer lumps have flaked surfaces, resembling those of flints, others were scraped smooth and incised. The most perfect of these objects, and possibly the most significant discovery of the excavations, is a statuette of a woman, delicately carved in haematite (PLATE VI). It lay beneath a mammoth molar, by the edge of the hollow of the southern hearth in Hut-site III. Together with it was another, less perfect, female figure. The statuette, a miniature $1\frac{3}{4}$ inches in length, is unbroken. The carving shows that it never possessed a head, or the lower parts of the legs, and that it was, in fact, a realistically executed torso, having none of the exaggerated sexual characteristics of the familiar ' Venuses '.

The difficult nature of the baked material compelled the artist to resort occasionally to a mild degree of stylization ; but, on the whole, we have here a significantly successful work of art, which substantially enriches the series of Moravian contributions.

The Earliest Fire-makers

by Kenneth Oakley

British Museum (Natural History),

FLYING across Africa to attend the Pan-African Congress on Prehistory in Livingstone in July of last year I was frequently reminded of how characteristic of man is his continual use of fire, not only in cities but in the primitive open spaces. There were few moments in the course of the whole journey when signs of fire or artificial light were not somewhere visible. As we passed over the sparsely inhabited bush and savannah country of south-central Africa one could sometimes count up to a dozen columns of smoke rising from the landscape spread out below. Some of these were deliberate bush-fires which the native farmers start early in the dry season as a safeguard against the disastrous spread of uncontrolled fire at the end of that season when the vegetation is like tinder.

At the Livingstone Congress there were several communications bearing directly or indirectly on the question of how long has man, particularly in Africa, had fire at his disposal.

It is sometimes claimed that the first use of fire antedated the regular manufacture of tools. Curiously enough there are a number of myths in which animals are credited with having possessed fire before man ; but the claim seriously advanced to-day is that the sub-human *Australopithecus* used fire.

Unfortunately, the nature of the evidence on which this claim rests is such that it is still difficult to pass a conclusive verdict on it. Briefly the evidence is as follows.

In 1925 Professor Raymond Dart of Johannesburg—who earlier that year had described the first skull of *Australopithecus* from Taung in Bechuanaland—received a chunk of grey rock crowded with blackish bone fragments which a schoolmaster had collected at limeworks in the Makapansgat Valley, about 200 miles N. of Johannesburg. There were no stone implements visible in this bone breccia, but Professor Dart suspected that it represented a hearth or midden of early man, and he sent a sample to the Government Chemical Laboratory, where analysis revealed that it contained considerable quantities of free carbon, which in the circumstances seemed to indicate that the bones had been charred by fire. Twenty years later, bones collected from the same grey breccia at the Makapan Limeworks proved to include remains of *Australopithecus*. Professor Dart concluded that this creature had been responsible for the fires that charred the bones, and he described the remains under the name *Australopithecus prometheus*, after the Greek mythical hero who had captured fire for the use of man.

Since the publication of Professor Dart's rather startling conclusion, much more knowledge about the Australopithecines has been acquired. Remains of about a hundred individuals are now known from sites in the Transvaal, and it is clear that although ape-like in appearance they were able to walk erect, and they lived in open country. While not fully human, they qualify zoologically as members of the same family as man, the Hominidae. They had brains no larger than gorillas, but then they were lightly built and mostly of pygmy size, not more than 4 ft. high, so in ratio of brain-weight to body-weight they may have been just on the verge of the human range. It is possible that they

were semi-carnivorous and users of ready-to-hand tools and weapons. Indeed Professor Dart claims that the quantities of broken animal bones in the Makapan grey breccia represent material brought into the cave by *Australopithecus*. He makes the point that the bones have been selected ; for example there are hundreds of antelope limb-bones and jaws but relatively few vertebrae of the same animals. He therefore suggests that *Australopithecus* was not only a user of fire, but that he used antelope limb-bones as clubs for killing game, and jawbones as saw-knives for cutting up the carcases. Other authorities who have examined the evidence are unconvinced, and even doubt whether the cave was inhabited by *Australopithecus* at all. They point out that all the animal bones could have been introduced and broken up by carnivores. Sabre-tooth tigers and extinct types of hyena are known to have frequented the site, and they may have been very selective in their feeding habits. (And we may note too that whatever other rôle he may have played, *Australopithecus* was sometimes among the victims of predators at Makapan).

No stone artifacts have been seen in the grey breccia, but last year some chipped stones were reported from an overlying layer of gravel, apparently washed in by floods during the Australopithecine period. It may be questioned whether the chippings are artificial, and even if they are, whether they represent the work of *Australopithecus**. There is some evidence suggesting that, in the Transvaal, Australopithecines survived for a time after more progressive members of the same group had elsewhere evolved into true men of the genus *Pithecanthropus*, known to have been capable of tool-making. Just as two types of ape live in the Congo to-day, so in early Pleistocene times, about half a million years ago, there may have been two types of hominid, the one a maker of pebble tools—true man, the other more backward, at most only an occasional tool-user.

That is the background against which we have to consider the alleged evidence of fire in the Makapan breccia.

First one naturally looks for confirmation that there really is free carbon in the bed containing the remains of *Australopithecus*. Unfortunately it is not forthcoming. A number of new samples have been tested and no free carbon can be found in any of them. The blackness of the bone fragments in all the samples tested recently proves to be due to manganese dioxide. Yet the fact remains that competent chemists determined considerable quantities of carbon in the pieces collected at the same site in 1925. One cannot avoid entertaining a doubt whether the carbon in the original samples was indigenous. There is always the possibility to be considered that material from recent fires had, by some strange chance, infiltrated, or been introduced through blasting. So long as no carbon can be found in samples of the Australopithecine bed collected under test conditions, one feels bound to say that there is no valid evidence that *Australopithecus* was a fire-user.

The oldest indisputable evidence of the use of fire in Africa is from deposits which are probably hundreds of thousands of years later than the Australopithecine layers. Strangely enough the evidence is from another cave in the Makapan Valley—actually a deep rock shelter where excavations revealed a thick series of occupation deposits ranging from the end of the Lower Palaeolithic Age to the time of European settlement. Professor C. van Riet Lowe, who first explored this remarkable site, aptly named it the Cave of Hearths, for at ten levels in the sequence ashes of human fires were encountered. At the Congress in Livingstone, Mr Revil Mason of the S. African Archaeological Survey gave an account of the total excavation of the deposits, which involved the removal of

* This question has already been discussed in the March number of ANTIQUITY, p. 4.

hundreds of tons of material. Some of us were lucky enough to visit this site, either before or after the Congress.

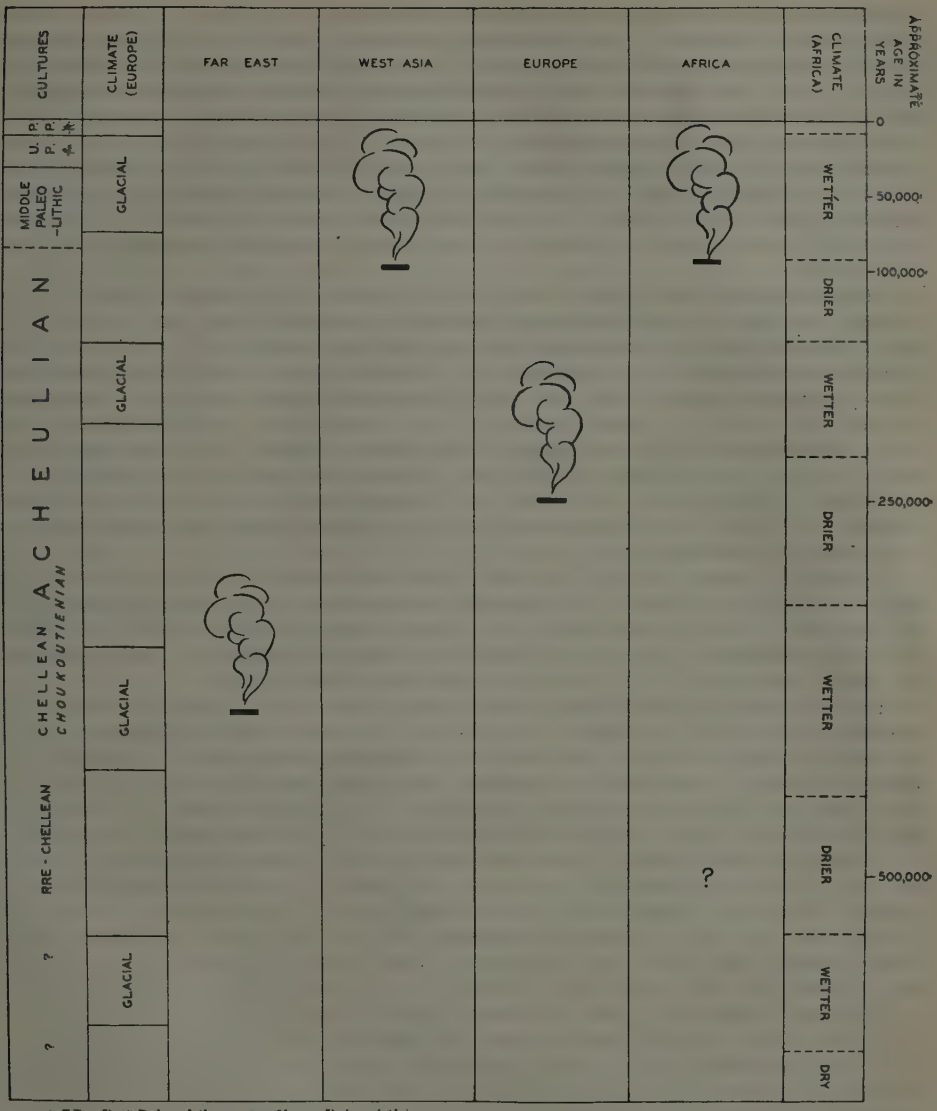
The lowest hearth is associated with Late Acheulian hand-axes. It is surely a remarkable fact that this Cave of Hearths was used as a dwelling by man on and off from late hand-axe times, perhaps 50,000 years ago, until well into the present era (the latest hearths are of the Iron Age). Yet no trace of earlier human occupation has been found in any cave or rock-shelter in the Makapan Valley or elsewhere in the whole of Africa. We know that there were four or five stages of stone age culture preceding the Late Acheulian, and that although these are abundantly represented in Africa on open sites, no trace of them has ever been found in a cave. Moreover, the occurrence of Late Acheulian implements in a cave in the Makapan Valley is not unique. Hand-axe industries of the same stage of culture occur in the Montagu Cave in the Cape Province at a lower altitude. It might be thought that cave deposits of earlier ages have been removed by erosion, but that is not the case. The Australopithecine deposits further down the Makapan Valley are much older than the hand-axe period. Indeed there are cave deposits of intermediate age there, but they have yielded no sign of human occupation. Yet early hand-axe industries belonging to this long period intervening between Australopithecines and the Late Acheulian stage occur on open sites not far away.

Another suggestion is that climatic conditions, such as increased rainfall, drove men to occupy caves and rock-shelters in Late Acheulian times. This may have been a contributory factor, but we know that there were similar climatic changes in South Africa during earlier stages of the hand-axe culture. There must have been some overriding factor. It seems to me that the most likely explanation is that few, if any, of the earlier hand-axe people were equipped with fire and that until men had fire at their disposal regular occupation of caves and deep rock-shelters was too hazardous. In such situations small groups of human beings would have been extremely vulnerable to attack by predatory beasts unless they had fire as a protection.

There is, then, no acceptable evidence of man's use of fire in Africa earlier than the Late Acheulian. It has been suggested that charcoal would only survive in *cave* deposits, but in fact fragments of carbonized wood, apparently charcoal, were found by Dr Desmond Clark at an open site near Kalambo Falls in a layer with ' Final ' Acheulian hand-axes. Moreover, fire-reddened and fire-crackled stones would be equally revealing at an occupation site—yet none was observed at the Chellean butchering site in Bed II at Olduvai (Tanganyika) or on the Acheulian ' floors ' at Olorgesailie (Kenya).

In Asia and Europe there is evidence that fire was used earlier than in Africa (FIG. 1). The oldest undoubted hearths were found in the Choukoutien caves occupied by Pekin Man. Charcoal also occurred with traces of chopper-tool industry in an open gully deposit slightly ante-dating the cave deposits containing the remains of Pekin Man. Thus the earliest unquestionable indication of the use of fire immediately precedes the earliest example of a cave being occupied by man—further support for the idea that cave-dwelling was dependent on possession of fire.

The hand-axe makers in Western Asia as well as in Africa were using fire in the Late Acheulian stage. Evidence for this comes from a cave site near Palmyra in Syria and from rock-shelters in Palestine and Jersey. If we leave out of account some apparently burnt flints in the ' Pre-Glacial ' Crag deposits of East Anglia, which may have been the result of natural heath fires, the oldest indications of the use of fire in Europe come from deposits with Middle Acheulian hand-axes. For example, the lake-side occupation site at Torralba in Spain has yielded pieces of wood including the end of a pointed stake which is charred. A few months ago excavations by Mr Bertram Wymer revealed black



* P.P. = *Post-Palaeolithic*; U.P. = *Upper Palaeolithic*

FIG. 1 EARLIEST EVIDENCE OF THE USE OF FIRE IN THE MAJOR PROVINCES OF THE PALAEOLITHIC WORLD

carbonized fragments which may be charcoal in the gravel layer that contained the bones of the Swanscombe skull. Lake beds of the same age at Hoxne in Suffolk have recently been re-investigated by Dr Richard West. In studying the sequence of pollen assemblages in these beds, corresponding to the changing pattern of vegetation during their accumulation, he found charcoal within a zone where the pollen-graph indicated a temporary decrease in trees and an increase in grasses. No evidence could be found that this reflected a climatic change, but it coincided with evidence of occupation of the district by Acheulian man. Is it possible that even at this early level of culture, woods were being destroyed by man ? The early use of fire for driving game by the aboriginal hunters in North America is believed to have greatly expanded the grasslands of the New World.

Did the earliest users of fire in the Old World collect this precious commodity from natural conflagrations and conserve it desperately, or did they know how to make fire ? Even in recent times the Andamanese were ignorant of fire making and relied on carefully tended fire-brands taken from the fires of neighbouring people who had the knowledge. Many myths and customs in our own time show that even among people who know how to make fire there is a strong tradition of the virtue of the undying flames. One Northumbrian family a few years ago boasted that the peat-fire in their cottage had not been allowed to go out for two centuries. Before man could utilize the accidental discovery that this or that action led to fire, he would surely have required some experience of handling fire, and this he could only have gained through having isolated and controlled fire of natural origin.

Man could have repeatedly captured fire without much difficulty in some volcanic areas. Elsewhere he would have depended on occasional forest- or bush-fires started by lightning. In a damp environment outcrops of coal or oil-shale sometimes become ignited spontaneously through rapid oxidation of pyrites nodules. A cliff of oil-shale in Dorset caught alight in this way in 1826 and burned for four years.

It is probable that discoveries of how to make fire occurred through the use of and manufacture of tools. Fire can be produced in two main ways : By *percussion* of stone on stone, or stone on metal, and by sustained *friction* between pieces of wood. The sparks produced by striking stones together must have been very evident to men of the early stone age when they worked in dim light. The flashes produced by flint on flint have no incendiary properties, but the use of a nodule of iron pyrites as a hammerstone in flaking flint would readily lead to the discovery of the percussion method of making fire, for the sparks produced in this way are hot incendiary particles easily kindling dry tinder. The oldest undoubted fire-making apparatus is in fact a nodule of iron pyrites, with a groove produced by systematic striking, which was discovered in an Upper Palaeolithic (Magdalenian) layer in a Belgian cave. The striking of pyrites on flint or quartz was probably the first regular way of making fire. It is still used by the Canoe Indians of Tierra del Fuego and by the Greenland Eskimos, whose word for fire, reminiscent of the Latin name, is evidently onomatopoeic for it suggests the striking stones : IG-NEK.

The production of fire by *friction* is unlikely to have been invented before technology had reached a state at which bone, antler, ivory and wood were being shaped by grinding, or when holes were bored in such materials by rapid rotation of a drill. That is to say it is unlikely that any of the devices known as the fire-plough, the fire-twirl or the fire-drill, were invented before the Upper Palaeolithic times, indeed possibly not before the Neolithic. Incidentally the Greek word for fire, PYR, like our word fire itself, suggests the sound of the fire drill.

It is conceivable that the Acheulian people and Pekin Man of Early Palaeolithic

times were still at the stage of fire-collecting, but the regularity with which hearths accompany Middle and Upper Palaeolithic industries leaves no doubt that Neanderthal Man and people of the Cro-Magnon and related races were fire-producers, with fire-making devices as part of their essential equipment.

Primarily there is little doubt that fire served man as a defence against predatory animals. It was the shield of fire that made it possible for small family groups to survive both in rock-shelters and in comparatively open situations. The use of fire greatly extended man's horizons, both physically in the sense of physical environment, and emotionally, for hearth is almost synonymous with home. Before the possession of fire, man's cultural activities terminated at sundown. In extending man's range northwards, the lighting aspect of fire was probably almost as important as its heating aspect.

It is often assumed that man could not have lived in cold regions without the advantage of fire, but Thomas Simpson writing of the seal-hunting Eskimos in 1843 has recorded this: 'They never seem to think of fire as a means of imparting warmth—their lamps are used for cooking. light, melting snow and drying clothes rather than to warm the air'. They use blubber as fuel and food; its heating value is theoretically the same whether burnt or digested.

The possession of fire made an incalculable contribution to the cultural evolution of man, particularly as regards technology; and probably reacted on his physical development too, for as cooked foods replaced a diet of raw meat and fresh vegetable matter the whole pattern of mastication, digestion and nutrition was altered. It has been suggested by Professor Carleton Coon that the earliest fire-users, including Neanderthal Man, did not use fire for cooking, but only for protection from predatory beasts and for warmth. It is true that broken animal bones from a Neanderthal habitation site at Tangier showed no signs of charring, but in my experience charred food-bones are characteristic of the hearths of Neanderthal Man in Europe. Burnt bones occurred too in the hearths of hand-axe man in the Makapan valley in S. Africa.

Sir James Frazer in his survey of myths dealing with the origin of fire was struck by the number in which there is insistence that the greatest hardship for man to bear in an age without fire would be having to depend on sun to warm his food. Frazer said that this craving for hot food is a natural instinct of the human organism for which physical causes may probably be assigned by science. More recently Dr Hediger in his observations on animals in captivity has noted that for all predatory animals, except carrion feeders, warm food is natural. Is man's love of the hot meal a reflection of a predatory nature?

Notes and News

EARLY GOATS

The methodical excavation on modern lines of Jarmo in Northern Iraq (see ANTIQUITY, XXIV, 1950, 189–95 and p. 113 below) has already thrown light on the beginnings of agriculture; and the intensive study of the animal remains found there will surely make a corresponding contribution to the history of the domestication of animals. Meanwhile similar work at Jericho, an even older site of permanent settlement, has yielded remains of two breeds of goat. In the oldest, pre-pottery, strata the goats had straight upright horns, called by Professor Zeuner, scimitar-horns; in an Early Bronze Age level, however, was found the horn-core of a goat with spiral or screw-horns. In an article on the subject published in the *Palestine Exploration Quarterly* for April, 1955, Zeuner points out that the screw-horn goat 'appears, and possibly replaces, the straight-horned in the economy of the early Metal Age all over the Fertile Crescent and the eastern Mediterranean. In Cyprus, for instance, the Neolithic site of Khirokitia [which is pre-pottery] has the scimitar-goat, whilst the Bronze Age site of Pygades . . . contains the screw-horn goat'. These screw-horn goats 'became the parent stock of most modern breeds, including the Mamber goat which is so abundant in Palestine'. Attention was first drawn to them in ANTIQUITY (XI, 1937, 226–8) by Professor Amschler, who described goats of this breed from Ur and Kish and pointed out that the same breed is represented in Egypt at Beni Hassan at about 2000 B.C. In the Rijksmuseum van Oudheden at Leiden are exhibited some excellent bas-reliefs of animals, including goats with wide-spreading screw-horns. Other animals with straight horns are presumably sheep as they lack the beards and upright tails which are the distinguishing features of goats. Together with these animals, and also being led, are others, presumably ibex, with both straight and curved horns. These bas-reliefs are from the tomb-chapel of Achet-hetep-her at Saqqara and are of the 5th dynasty, about the middle of the 3rd millennium. An even earlier, pre-dynastic, representation of a screw-horned goat is painted on a vase from Nagada (Baumgartel, *Cultures of Prehistoric Egypt*, 1947, plate IX, 3).

Amschler also called attention to the discovery by Professor Magliano of Messina, of a still extant modern breed of spiral or screw-horn goats at Agrigento (Girgenti) in Sicily, and to the existence of large herds of the same breed in Switzerland (Vorarlberg) in the 17th century. After his first note was published I was lucky enough to find screw-horn goats still living in Bulgaria. The identification was confirmed by Amschler, who added that he had now found others still existing in Crete, Malta, Greece and southern Albania (ANTIQUITY, XII, 1938, 81–2). It is now possible to add the Canary Isles to the list of places where screw-horn goats have survived down to modern times. In the Las Palmas Museum is a fine stuffed goat, with a kid, caught in La Caldera de Taburiente in the island of La Palma before 1936 (PLATE VII). It has the same screw-horns as the rest, and although wild must surely be an escape from a domestic herd.

The study of prehistoric breeds is not sufficiently complete for any conclusions to be drawn from their known distribution. The blank spaces on the map may simply be due to lack of recorded instances rather than to non-occurrence. Are there, for instance, any records of the screw-horn goat on prehistoric sites in Northern Europe and the British Isles, and is it found in Swiss lake-dwelling sites? On purely *a priori* grounds one would

expect the first domestic goats of Northern Europe to be of the straight-horned breed, if the first food-producers reached Europe before the invention of pottery. The Cyprus evidence shows that the great westward migrations had already begun then. Professor Zeuner has promised us a discussion of the origin of screw-horn goats in his forthcoming book, *A History of Domesticated Animals* (Hutchinson), and we look forward eagerly to its publication. On the Jericho evidence it appears that, except for the dog, the straight-horned goat was the first animal to be domesticated; but we must not forget that the little-explored regions east and south of the Caspian may still contain important evidence bearing on this subject.

BOURNEMOUTH

On the south coast of England, nearly midway between Land's End on the west and the Isle of Thanet on the east, is a huge agglomeration of houses called Bournemouth. It is essentially a prosperous residential region, with a population in 1951 of 144,845. Yet 150 years ago it was an open heath with no more than two or three fishermen's cottages (PLATE VIII). In 1802, the heath was planted with Scotch firs, to whose 'valuable medicinal properties . . . combined with the invigorating sea air' the origin of the town is attributed[1]. The first modern house was built there in 1810, by Mr L. D. G. Tregonwell, described on his tomb in St. Peter's Church, as 'the founder of Bournemouth'. But the effective founder was Sir George W. Tapps-Gervis, who in 1836 'began to lay out the land on the east of the Bourne stream'. In the mid-Victorian age the place had become a favourite winter residence for invalids with 'many handsome mansions and commodious lodging-houses, a suite of public baths, a good library and reading rooms, and a number of bathing machines'[2]. In 1871 the population was 5,906 and the governing body consisted of a Board whose chairman was the lord of the manor of Westover. Three centuries earlier the barren unprotected coast-line here was a source of anxiety to the government as being a good landing-place for an enemy, and in the following century Chewton Bunney, Boscombe and Hengistbury were mentioned as likely places[3]. Curiously enough the first mention of Bournemouth in history is also concerned with a landing, though not of hostile forces but of a whale. The passage is cited in Ekwall's Dictionary, and I am indebted to Mr J. E. Gover, who discovered it independently in the Christchurch Cartulary[4], for calling my attention to it and thus initiating the present note. The entry states that on 13 October 1407, a great fish, 18 feet long was found on the seashore near Bournemouth (litus maris prope la bournemowthe) and was regarded as sea-wrack (wreke maris) in the manor of Wyke at Westover, and claimed as such by the lord of the manor. The stranding of whales is not an uncommon occurrence; a few years ago one was stranded on the shore of Southampton Water opposite the town, and its disposal caused much embarrassment to the urban authorities. But in medieval times such strandings were prizes eagerly claimed by the inhabitants who were well aware of their valuable contents and fully able to exploit them. Beachcombing is no longer practised by the residents of Bournemouth, and it is unlikely that, if a whale should have the misfortune to be stranded there, they would hasten to claim it, still less to cut it up and use it.

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[1] *Victoria County History, Hampshire*, vol. 5, 1912, 134.

[2] White's *Directory of Hampshire*, 1878, 157.

[3] *V.C.H.*, loc. cit.

[4] Brit. Mus. *Cotton MSS. Tiberius*, D, VI, fol. 134.

In prehistoric times Bournemouth was by no means a barren heath or backwater. At Holdenhurst in the Avon Valley is a Long Barrow, the only one recorded on the Tertiary lands south of the populous chalk uplands. A number of beakers have been found in the district and remains of the Late Bronze Age are common. The harbour of Christchurch was the prehistoric port of entry for Salisbury Plain, and in the Iron Age there was a flourishing settlement, defended by earthen ramparts, on the peninsula of Hengistbury. A hint of far-flung foreign trade is given by the shaft-hole bronze axe found in the sea opposite Boscombe[5].

I wish to acknowledge with many thanks the permission given to reproduce the old manuscript Ordnance Map (PLATE VIII), made for the original one-inch survey, and the supply of a photographic print for that purpose by Mr C. W. Phillips, F.S.A., Archaeology Officer. O.G.S.C.

EXCAVATIONS AT MOTYA: A PHOENICIAN COLONY IN SICILY

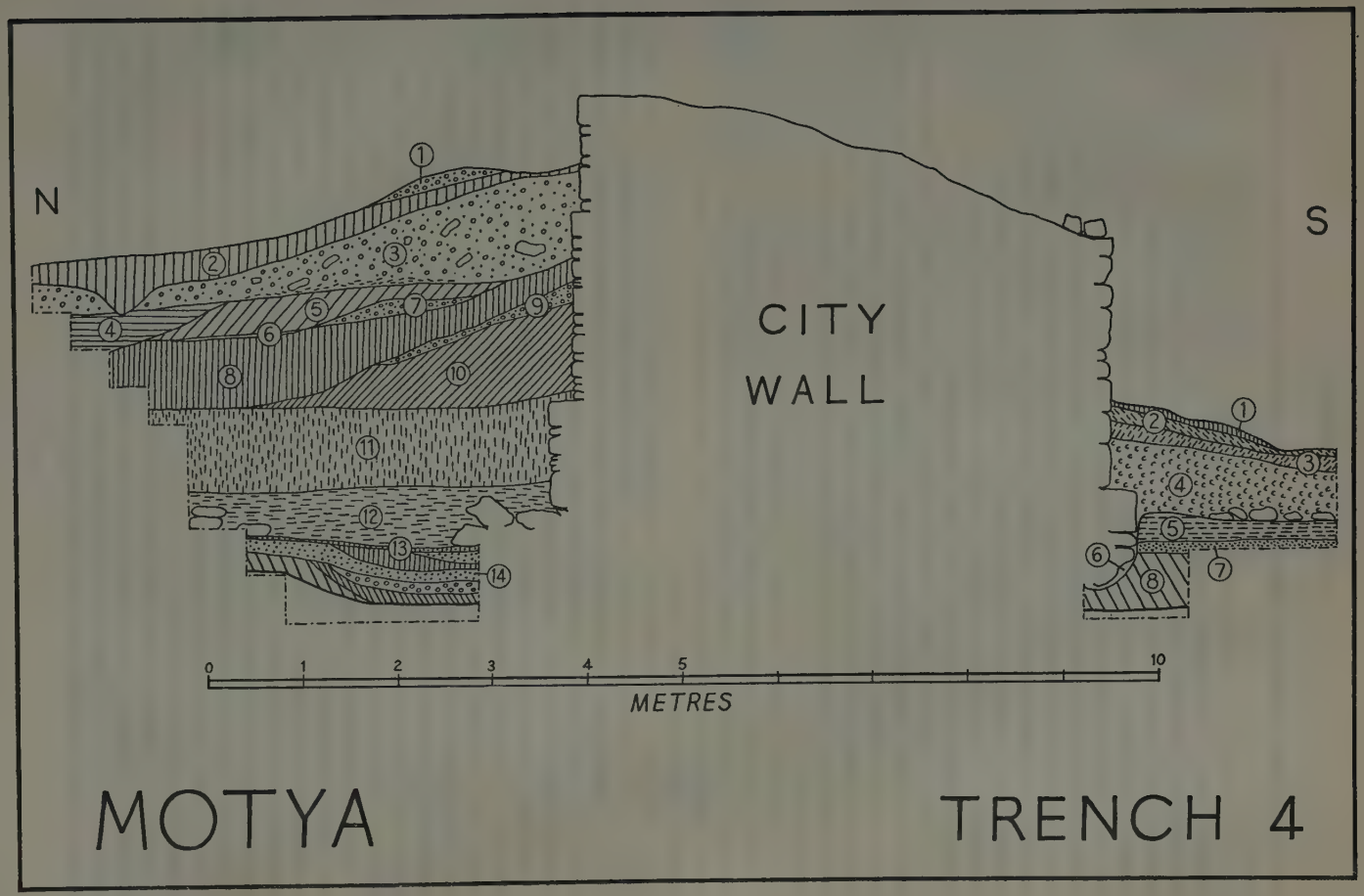
Recent years have seen a growth of scientific interest in the Phoenician cities of the Western Mediterranean. The largest of these, Carthage, was erased by her Roman conquerors and recent building activities have robbed the site of much of its archaeological value, while at Tharros (Sardinia) and Cadiz the rich tombs have been consistently plundered since mediaeval times; so that to-day only Utica, Sardinian Nora, and the island emporium of Motya, lying close to the Marsala headland in N.W. Sicily, remain free for investigation. Utica and Nora are both in process of excavation. So far the former has yielded little earlier than the 7th, and the latter nothing earlier than the 5th century B.C., and as both were considerable cities in Roman times, the difficulties of disentangling the purely Punic strata are great. Motya, however, has remained virtually unoccupied since its destruction in 397 B.C. by the Greeks under Dionysius of Syracuse. At the beginning of the present century it passed into the possession of Mr Joseph Whitaker, an English wine merchant and amateur archaeologist, and it was by kind permission of his daughter, Miss Delia Whitaker, the present proprietor, that a short preliminary excavation was carried out there last summer by an Oxford University Expedition, headed by Dr B. S. J. Isserlin, and largely financed by grants from the Craven Committee of the University and from the Universities of Cambridge and Leeds.

In 1921 Whitaker summarized the results of more than a decade of his excavations on the island*. Large stretches of the encompassing walls, monumental gateways, and landing stages were uncovered by him, and excavations carried out in the cemeteries enabled him to establish a museum of pottery, both Greek and Punic. But of the closer problems of Motya, the date of its foundation, the style of its domestic buildings, and the nature of its trade as an *entrepôt* between the Greek, Phoenician and indigenous peoples of Sicily, little was known.

It was not to be expected that five weeks of digging would solve all these problems, yet light has already been thrown on many of them. Briefly, the expedition has been able to show that probably the earliest settlers from the east arrived on the island towards the end of the 8th century and found already established there a strong prehistoric community. For some generations Phoenician settlers and Siculan natives lived side by side. The island was given its stone defensive walls sometime during the 6th century

[5] See ANTIQUITY XII, 1938, 225–8, plate I, opp. p. 232 and for the region as a whole see J. Bernard Calkin: 'The Bournemouth Area in Neolithic and Early Bronze Age Times', *Proc. Dorset N.H. and Arch. Soc.*, LXXIII, 1951, 32–70 and references on p. 70.

* *Motya, A Phoenician Colony in Sicily*, J. I. S. Whitaker, 1921. (G. Bell, London).



MOTYA TRENCH 4

and they stood, though no doubt from time to time repaired, until the sack of the city in 397.

This history is well illustrated by the section dug across the city wall alongside the South Gate. The layers of mixed clay underlying the wall (layer 14 on the accompanying section) contained prehistoric sherds technically related to the coarse Siculan II wares of East Sicily, which lingered on in the backward west until the Greek settlement. Against the inside (North) of the wall the lowest occupation levels associated with it (11 and 12) contained imitation Corinthian ware, Ionian cups, and rims of early black-glaze cups, an assemblage belonging to the late 7th and early 6th centuries. Above this, accumulated débris (layers 10 to 4) produced a succession of mid-6th to very early 4th century sherds, and this in its turn was sealed by a floor level, marked by a mass of crushed wine-amphorae (between layers 3 and 5), which must represent the last occupation level. The red-burnt layers of fallen brick and masonry resting on this floor illustrate graphically the nature of the final catastrophe.

A second section dug across the walls on the north side of the island tells much the same story, though here the presence of pits, of subsidiary walls (perhaps belonging to garrison quarters), and of burials, has complicated the stratigraphy. A cremation burial just outside the city wall, and ante-dating it, yielded an Ionian cup ; while a stone sarcophagus, of a type found by Whitaker, contained three complete vessels of the early 5th century.

Near the ' cothon ', probably an artificial harbour, on the south side of the island, a trench revealed the superimposed rubble walls of two buildings. The lower building had late 8th to early 7th century pottery in its earliest occupation level, and seems to have stood until the early 6th century, being later replaced by the second building, itself destroyed about 150 years later.

A building approached by a monumental avenue from the North Gate had been cleared by Whitaker and thought by him to be a temple. This building, known locally as the ' Cappiddazzu ', presented problems of a scale beyond the scope of a preliminary season. A trial trench, however, showed it to be of the late 5th century, and to lie over rubble walls of at least a century earlier. The building as it now stands—the foundations alone remain—is of blocks re-used from perhaps an earlier, truly Phoenician, temple. The pottery associated with the rubble walls was some of the most interesting found on the island, and included Etruscan bucchero, Italo-Corinthian and genuine late Corinthian wares, dishes characteristic of some inland sites of Sicily settled by the so-called Elymians, striped amphorae handles of a type found at Chios, and a great amount of Punic pottery of predominantly votive nature. There seems little doubt that this was the site of a shrine of wide importance long before the 5th century.

From the general pottery evidence of all these trenches it seems that when the first eastern settlers arrived in the late 8th century, they brought with them vessels of types found, for instance, at Al-Mina in Syria ; and, in fact, the whole of the early pottery tradition at Motya seems to be linked with that of North Syrian sites. These early comers from the east must have traded with the flourishing prehistoric community long before the island became a fortified settlement ; indeed, the hand-made scarlet-burnished pottery, which occurs with the earliest eastern sherds, might well represent local copies of an oriental pottery tradition.

In all the trenches there was abundant evidence that a group of prehistoric peoples, making bag-shaped flat-bottomed pots, lived alongside the Semitic colony until the beginning of the 5th century. Whitaker had found these vessels accompanying 6th century Punic burials, and it now seems clear that the culture of these metoecists

embodied a prehistoric pottery tradition differing from that of Siculan II affinities represented in the levels that antedate the building of the wall, and one difficult to place in the little known West Sicilian sequence.

The evidence suggested that the Motyan styles of Punic pottery began to develop in the mid-7th century, close to the patterns of Carthage, but never quite like them. It is not until the 6th century that vessels from Carthage seem to have been imported, and then sparsely, for it was rather with Greece and Ionia that Motya was connected in the 7th and 6th centuries. Imported Protocorinthian kotylai date the beginnings of this trade to the first decades of the 7th century, after which direct contact with Greece was broken. The early and middle Corinthian styles, frequent at Carthage, are poorly represented at Motya, and for perhaps the best part of a century the island potters produced a variety of crude imitations of Protocorinthian, until contact with Greece or the neighbouring Greek colonies brought to the island a quantity of Late Corinthian wares. But meanwhile connections with the East Greek world were strong, and Rhodian and Ionian cups, of types not found at Carthage, were imported in quantity. Brilliant orange and bright pink copies of these cups are the most beautiful products of the Motyan potter. From the late 6th century black-glazed wares are abundant, and by the late 5th century it seems that a colony of Greek potters was established on the island.

That these limited investigations have succeeded in indicating dates for the major buildings, the fortifications and the earliest settlement of the site, and that significant contexts of Punic, Greek and native pottery have been recovered, illustrate vividly Motya's importance as a key site for the study of the spread of Phoenician interests in the Mediterranean.

B. S. J. Isserlin,
P. J. Parr.
W. Culican.

THE IRAQ-JARMO PROJECT: 1954–5

The Iraq-Jarmo Project of the Oriental Institute of the University of Chicago carried on field work in western Asia from 1 September 1954 to 15 June 1955. The central problem of the project's effort was the reclamation of understandings, in the realms of both natural and cultural history, of the transition from the food-gathering to the food-producing stages and of the earliest establishment of the village-farming community. The following extract from a Report is printed by permission :—

'The autumn phase of the project's research involved archaeological, ecological, and geological survey in the drainage basin of the Greater Zab River in the Erbil and Mosul *liwas* of Iraq. Since this country varies in character from that of foothills to high mountains and amounts to over 5,000 square miles in area, the survey tended to be more extensive than intensive. Wright concentrated on the record of Pleistocene glaciation in the higher country (hitherto unrecorded) and on the gravel terraces in the lower elevations. Reed carried on field studies and commenced the collection of the skeletons of contemporary animals, especially of those species pertinent to the problem of domestication. Matson and Schreiber secured radioactive carbon samples from the early village levels of a number of pre-war excavations in northern Iraq. For practical purposes, the survey for new early village sites was largely restricted to small mounds with surface indication of a single and very early period of occupation; five such mounds were selected for test digging. Howe examined some two dozen caves and selected for his test digging four which had surface indication of what was hoped would be the terminal layers of the occupation of caves in north-eastern Iraq.

'The test excavations done in late November and December 1954 are briefly

described in *Sumer*, x (1954), 120–38. The essential points which derived from the test diggings are :

1. M'lefaat, a small mound on an affluent of the Zab, in Mosul liwa, appears on typological grounds to yield a pre-Jarmo type of assemblage. Different from the apparently temporary open-air encampment discovered by the project at Karim Shahir in 1951, M'lefaat appears to contain the traces of a relatively permanent village, with several layers of rebuilding of a very primitive architecture.
2. There does not seem to be a post-Zarzi or post-Palegawra aspect of the terminal food-producing era in the caves of north-eastern Iraq.

' The winter phase of the project's research involved a tour of archaeological reappraisal of the known cave and early village sites of the eastern Mediterranean littoral, with the exception of those lying in Israel. After a traverse of the northern Jazireh, from northern Iraq to Aleppo, Syria, a winter base was established near Beyrouth in Lebanon. From this base, the staff made a variety of tours collecting surface materials and radioactive carbon samples. The members of the natural sciences team were given the opportunity to observe a variety of types of ecological situations different from those available in Iraq. The end of the winter phase involved a visit to sites in Cilician Turkey and a return to Iraq by way of the Euphrates Valley and along the I.P.C. pipe-line to Kirkuk. This means that all of the staff visited Syria, Lebanon, Jordan and Cilician Turkey : Matson spent some days in Egypt securing further radioactive carbon samples, and Wright and Howe inspected an obsidian bed on the Anatolian plateau.

' The base for the spring phase was established adjacent to the site of Jarmo on 9 March 1955. Howe concentrated on the completion of excavations in the cave of Palegawra, begun in 1951. He also made one further test excavation in a cave in the Greater Zab basin. The plan of campaign at the village site of Jarmo depended on our assumption that the site had been sufficiently tested in *depth* during the 1948 and 1950–1 seasons of work. Hence, an attempt was made to examine the all-over village plan of the latest (uppermost) phase in *breadth* by means of a grid of some 150 two-by-two metre square test pits. It was hoped that these squares would serve as a basis for the extrapolation of the late village plan, or as points for expansion in the most interesting areas encountered. The experiment was only a qualified success : the squares will not, apparently, lend themselves adequately to meaningful extrapolation of a total village plan. On the other hand, various interesting architectural features did appear, and it is now anticipated that the site needs still more excavation. The campaign indicated that the normal elements of the Jarmo small object assemblage had already been uncovered by the end of the 1950–51 season, but knowledge of the very interesting figurine category was considerably elaborated by this season's work. A link with the archaic painted pottery of Hassuna was seen in some sherds which occurred in the upper ceramic-yielding levels of Jarmo.

' The work of the natural sciences team was most fruitful during the spring phase. Wright continued his geological survey from the higher Kurdish mountains through the foothill country and down into the alluvial plain. One such traverse was taken from the Iranian plateau to the Iraqi desert beyond Rutbah. Wright's final observations, after leaving camp, were made in the Hakiri district of the high mountain country of the Iraq-Turkish border, where further traces of Pleistocene glaciation were apparent on the northern (Turkish) flanks.

' Helbaek's botanical work was concentrated mainly in the immediate environs of Jarmo, where a systematic botanical collection of all available plants (with particular

attention to the weeds of the grain fields) was made throughout most of the growing season. Helbaek made short tours into other districts for comparative purposes, especially for the collection of wild cereals. The herbarium was collected in three sets, one of which will remain as Helbaek's personal research tool, one for the Royal Botanical Gardens at Kew, and one for the Botanical Museum of the University of Copenhagen.

' Reed considerably expanded his comparative osteological collections, already begun in the fall phase, with the aid of hunters enlisted from the Jarmo excavation labourers. Specimens of all of the extant wild forms pertinent to the problems of animal domestication were secured, as well as the bones of many other wild animals. A working collection of the skeletons of the local domesticated animals was also prepared. These collections have been placed with the Chicago Natural History Museum.

' Matson, assisted by Schreiber, made further tours of the key sites of both classic southern Mesopotamia and of northern Iraq for the purpose of securing radioactive carbon samples and also samples of late prehistoric potsherds and natural occurrences of raw clays. In all, some 52 radioactive carbon samples were collected, including those from our own excavations and test digs.

' Helbaek, Matson, Reed, and Wright also participated directly in the reclamation, preparation, and field interpretation of the various materials in their particular categories of concern from the different excavations and test digs. The reduction of the raw data from both ancient and modern contexts is now being undertaken by each of these field collaborators '.

Halaf, Arpachiyah, basal Gawra, BANAHILK
Hassuna (standard, incl. Samarran painted style), *Matarrah*, Ninevite I
Hassuna (archaic), basal *Matarrah*, EL-KHAN
ALI AGHA
Jarmo
?
M'LEFAAT
?
Karim Shahir, (CHAI)
? ? ?
Zarzi, *Palegawra*, Shanidar B, BARAK, (HAJIYAH), (BABKHAL)
?
?
Shanidar C
?
Hazer Merd, Shanidar D, BABKHAL
?
?
Barda Balka
?

FIG. 1. THE PREHISTORIC SEQUENCE IN N. AND N.E. IRAQ DOWN TO AND INCLUDING THE HALAF PHASE, AS OF JUNE 1955

Italics = Sites worked by the Iraq–Jarmo project before 1954–5
Capitals = Sites tested by the Iraq–Jarmo project after survey in 1954–5
Lower case = Sites worked by other excavators
( ) = Material of which associations are not clear, assessed on typological grounds only.

NATIVE MONUMENT IN CENTRAL AUSTRALIA

We are indebted to Mr W. A. S. Butement, O.B.E., and Group Captain A. G. Pither, C.B.E. for the following note* :—

During a recent visit of an official party to a remote part of Central Australia in connection with defence requirements, a very interesting native relic in stone was discovered.

It was located approximately 250 miles inland from the Great Australian Bight and about 200 miles east of the West Australian border. At the actual site there were two large claypans, which probably became shallow lakes in wet periods. These were bounded on the south-west by a low range of hills. The hills presented a rather striking appearance from a distance giving the impression of terraced surfaces. Close inspection showed that this effect was due to differential weathering of the strata. Hard bands of slate three to four inches thick had proved much more resistant to attack than the adjoining clays and gravels, and consequently stood proud of the surface, giving the effect of terraces.

The site of the monument is about 100 yards from one of the lakes and lies along a small dry creek bed leading into the lake. It consists essentially of a series of stone piles, all of which show a characteristic style of construction. These piles are grouped in two areas. In one area (shown on PLATE IX, A), they are placed in a straight line and spaced at intervals of approximately 12 feet. Some twelve piles are discernible on the ground. The line runs on a bearing of about 9° true. The second area lies on the opposite side of the creek and is roughly 50 yards square. Part of this is shown on PLATE IX, B. There is a large number of piles which, in general, are considerably bigger than those in the first area. However, as far as can be ascertained, these are not arranged according to any particular pattern. The characteristic form of construction of the piles can be seen on PLATE X, A. Basically they consist of a central slab approximately 3 feet to 4 feet high, 2 inches to 3 inches thick and 6 inches to 12 inches wide. This has been placed vertically on the ground and held in position by a collection of stones piled around its base.

Associated with the second area there is an individual feature of considerable interest. This is a natural platform formed by an out-crop of the slate in the highest horizon exposed. This gives the impression of having been used as a rostrum or conducting platform and in fact the party nick-named it the ' High Priests' Platform '. Some weight is given to its possible use for such a purpose by the presence of slate slabs, one on each side, now being flat, but which had evidently stood erect at some time past. A general impression of the platform is given by PLATE IX, B.

The piles of stone in the second area have the appearance of having been added to progressively. PLATE X, B shows one of the largest piles, while those seen on PLATE X, A may represent earlier stages of development.

Possibly an estimate of the age of the relic might be made from geological considerations. It seems clear that the whole of the stone was drawn from the slate out-crops in the creek bed. In view of the comparatively large amount of stone involved, it can be assumed that there was considerable activity in the area and the stone as produced was sound. However, the present outcrops have weathered to such an extent that many of the stones there can now be dislodged at the touch of a finger. It would therefore appear that an estimate of the time required for this weathering might throw some light on the age of the relic. A feature which may have considerable significance is that various piles have the appearance of having had fires built around them.

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* We wish to express our thanks to Mr Norman E. Lee, of Melbourne, for calling our attention to this discovery.—EDITOR.

PLATE IX

a. WOOMERA: ROW OF STONE PILES

b. WOOMERA: STONE PILE AND (beyond) PLATFORM

facing p. 116

PLATE X

a. WOOMERA: TYPICAL STONE PILES

b. WOOMERA: ONE OF THE LARGEST STONE PILES

THE GARAMANTES

We have received the following comments :—

Two comments occur to me on Mr E. W. Bovill's interesting paper on ' The Camel and the Garamantes ' (ANTIQUITY, March 1956, 19–21). (*a*) Septimius Flaccus is not identifiable as ' legate of Numidia ', nor can his expedition be dated to the reign of Trajan ' somewhere about A.D. 100 ': as Arthur Stein pointed out (Pauly-Wissowa X, 2, 1923, 1564 f.), his activities presumably fell somewhere within the period A.D. 70–100 or not much later, since the Garamantes were still hostile at the former date, and Marinus (who records them) is commonly supposed to have written his book in Trajan's day—though it does not follow that the event was taken from very recent history. In that period, there seems no room for Septimius Flaccus as legate of *III Augusta*, even if there were evidence for his senatorial status ; it might well be that he was an equestrian officer, perhaps a *praefectus equitum* commanding a mobile column : but neither he nor Julius Maternus is attested otherwise, and speculation would perhaps be pointless. (b) The Roman army's use of camels can be given a far closer *terminus ad quem.* One of the cavalry units listed in the Syrian diploma of A.D. 157 (*CIL*, XVI, 106) is the *ala I Ulpia Dromadariorum milliaria*—raised by Trajan, as its title *Ulpia* proclaims ; and if Trajan raised a whole regiment of camel-riders, we shall be justified in inferring that the employment of that arm was not a complete novelty in his day. The bone of a camel found in the legionary amphitheatre at Vindonissa (Gesellschaft Pro Vindonissa, *Jahresbericht* 1952–53, 23 f.) should imply the presence of a camel there before A.D. 100 but need not, of course, mean that *XI Claudia* had camels on its establishment (U.S., Table of Organization).

ERIC BIRLEY.

Mr E. W. Bovill in ' The Camel and the Garamantes ' (ANTIQUITY, 117, p. 20) does less than justice to the Romans in suggesting that they reached no further into the interior of Africa than Tibesti. On the evidence of Seneca (*Nat. Quaest.* VI, 8, 3–5), Pliny (VI, 181, 184–6) and Cass. Dio (LXIII, 8), they appear to have reached as far as the Sudd, on the White Nile ; perhaps (see Cary and Warmington, *The Ancient Explorers*, p. 174–6) as far as the point of entry of the Sobat. The references to ' immense marshes ' and to ' plants entangled with the waters ', impenetrable except to a one-man canoe, make this reasonably sure.

These ' soldiers of the Praetorian Guard ' were sent by Nero probably, as Pliny says, on a reconnaissance to gain intelligence preparatory to a military expedition against the Sudanese. They brought back a full report, and a map, from this remarkable journey which was not attempted again by Europeans till the 19th century. Seneca describes how he interviewed two centurions of the party in Rome, but his statement that they were sent for exploration, to find the sources of the Nile, is less likely than Pliny's explanation.

L. P. KIRWAN.

MR BOVILL comments :—

' Mr Kirwan is of course correct. I should have qualified my statement with the words " west of the Nile valley " '.

Reviews

QUMRAN CAVE I (= Discoveries in the Judaean Desert I). *By* D. Barthélemy *and* J. T. Milik (with contributions by R. de Vaux, G. M. Crowfoot, H. J. Plenderleith *and* G. L. Harding). *Oxford University Press, Oxford*, 1955. *Bound. In 4to*, 165 *pp.*, 10 *fig.*, 37 *pl.* 63*s.*

The Hebrew and Aramaic texts found in caves west of the Dead Sea, from around the time of the birth of Christianity, are a discovery of major magnitude. Since so many confused reports were disseminated before methodical excavation got under way, Mr Harding's account of the discovery is especially welcome. Father de Vaux's study of the pottery is meticulous; so is Mrs Crowfoot's handling of the linen textiles. Mr Plenderleith's technical note on the unrolling of the scroll fragments will aid every archaeologist faced with a similar problem.

A Carbon 14 test of the linen yielded a date between 167 B.C. and A.D. 237. The evidence of coins points to the end of the first century A.D. as the date when the scrolls were deposited in the cave (p. 27). Thus scientific laboratory methods in this field are not yet as exact as several types of old fashioned archaeological criteria.

The importance of the volume lies not so much in the archaeological material as in the texts. The biblical texts (edited by Father Barthélemy) are of interest for the light they throw on the transmission of the Old Testament before the fixing of our present Hebrew text by the Massoretes. But it is the non-biblical texts (edited by Abbé Milik) that are of prime historic value for what they tell us about a sectarian Jewish milieu that had a profound influence on men like John the Baptist, Jesus and the first Christians. Those sectarian Jews were far closer to the Essenes than to either the Sadducees or Pharisees.

P. 83: The restoration *balláylā hazzôt* is incorrect; it should be *balláylā hazzé*, for *láylā* ' night ' is masculine (*un*accented *-ā* is not the feminine suffix).

P. 110: The paramilitary organization of the religious community in ' armies ' for ' battle ' with ' soldiers ' and various ranks of officers (such as captains of thousands, of hundreds, of fifties and of tens) shows that there was a ' Synagogue Militant ' which lives on in its reflex the Church Militant. Many such features of Christianity now turn out to be the heritage from sectarian Judaism, rather than from paganism or from normative Rabbinic Judaism.

P. 121 (etc.): The doctrine of the two Messiahs might be interpreted as merely the harmonious separation of church and state; for one Messiah (The Messiah of Aaron) is priestly, the other (The Messiah of Israel) is secular. This concept was so widespread that Hippolytus felt obliged to regard both Messiahs as united in Jesus through the latter's descent from both the tribes of Judah and Levi (p. 122). Like so many institutions and concepts, this one of dual kingship may have an early origin, perhaps a pre-Hebraic origin; cf. dual kingship in Ugarit of the 14th century B.C. (Antiquity, xxix, 1955, pp. 148–9).

P. 126, line 27: The dental in *mišpāṭā(y)w* is ' ṭeth ' (not ' taw ').

The texts published in this volume are materials for rewriting one of the most important chapters in world history. Digesting, evaluating and interpreting the non-biblical texts from the Judaean Desert are the biggest tasks now confronting the Semitist.

Cyrus H. Gordon.

EL IN THE UGARITIC TEXTS. *By* MARVIN H. POPE. *Leiden, E. J. Brill*, 1955, x, 116 *pages. Supplements to Vetus Testamentum, vol.* II. £1 7*s. For subscribers to Vetus Testamentum*, 21*s.*

It is with great expectations one starts reading a book by Marvin H. Pope on El in the Ugaritic Texts. Most scholars have come into the Ugaritic field from other fields of research, a fact which has often coloured their work with the Ras Shamra texts. Not so with Marvin H. Pope, who started in this field and wrote his doctoral thesis about grammatical questions in the Ugaritic language. His book is intended to be the first one of a series. Studies of the other Ugaritic deities: Dagan, Baal, Asherah, 'Anat, Mot, and the lesser gods, are in preparation and it is hoped that they can be published in the near future.

Pope starts with a brief discussion of the word *'ēl* as appellative and as proper name. His conclusion is that the Ugaritic texts do not bring us any nearer to a solution of the question whether *ilu*, *'ēl* was originally a proper name or an appellative, since the vocable has both uses in Ugaritic. There can be no doubt, however, that El is the proper name of a specific deity in the Ugaritic texts and that he is the putative head of the pantheon.

Pope reviews some of the various proposals on the etymology of *'ēl*, because, as he says, ' of the great interest in the matter and to show the futility of the endeavour ' (p. 16).

In his discussion of the epithets and attributes of El, Pope has followed Della Vida in connecting El with the earth and not with heaven (p. 27). With some doubt he also accepts the suggestion that Melqart may be identical with the Ugaritic El. The reviewer is not fully convinced that El has to be connected only with the earth. As Pope himself points out ' El appears somewhat aloof and remote from the centre of activity in the mythological texts ' (p. 29). ' The actual rule of the world, however, appears to be divided between Baal in the heavens and on the earth's surface, Mot in the netherworld, and Yam in the sea '. El was the head of the pantheon, and it is not likely that as chief god he was specially connected with the earth only. That may have been so far back in time, but not when he was considered head of the Ugaritic pantheon; cf. also what Pope says, pp. 94 ff. on El's ruling before he was banished (by Baal) to the infernal regions of the earth.

Pope's attempt to localize El's abode at the Syrian Afqa - el Yammuneh is very interesting. As Eissfeldt was able to prove that the abode of Baal most likely could be localized on the top of Jebel el Aqra', the classical Mons Casius, it is natural that Pope tries to find where El's abode was thought to be. His task, is, however, much harder than was that of Eissfeldt, as very little is said in the texts about the abode of El. Pope's attempt is very ingenious—and he may be right.

Those who may have thought that Pope had no claws in his paws will have to change their view when they read his concluding chapter on El's status and significance in the Ugaritic texts. The reviewer enjoyed reading this elegantly and convincingly written chapter, where Pope discusses the opinion of other scholars and states his own point of view. He rejects Dussaud's theory that El was a god of a solar character and connected with the Egyptian Aton. In a thorough discussion of the text no. 107 he rejects in a most convincing way Eissfeldt's ' surprising conclusion ' that about 1400 B.C. a certain segment of the population of the city-state Ugarit worshipped El not only as the highest god, but as the absolute God.

In a previous chapter Pope discusses El's waning power, especially his decreasing procreative power as painted in the poem SS (pp. 37 ff.). He points to the fact that ' it is obvious that in a fertility religion a god whose procreative powers are waning must

soon give way to a younger and more virile successor' (p. 41), who is Baal. That is a feature which the reviewer has also stressed, but where he has met with opposition from the Danish Professor Løkkegaard, who argues that El's attitude is not weakness, 'but the highest virtue the Arabs knew in a ruler, *ḥilm*'. Pope's comments to this are sardonic: 'Løkkegaard draws an interesting parallel between El and the mortal king David who exercised a high degree of *ḥilm* in his reign. One could press this comparison a little further into the latter days of David's reign when what might appear as *ḥilm* was largely senile incompetence and incapacity' (p. 91). Løkkegaard is also scandalized at the suggestion that El has become a deus otiosus, a retired god. This he says 'is simply an outrage. How is it possible that El is otiosized'? Pope's answer is as brief as it is clear: 'Not only is it a possibility, but a fact the myths affirm'.

Following the suggestion of Cassuto and the reviewer, Pope is of the opinion that the Ugaritic myths included an account of El's banishment at the hands of Baal. This important episode may have been represented in the extant Ugaritic texts by the fragmentary fifth column of the text VI AB.

In accordance with what the reviewer has done with Baal in his 'Baal in the Ras Shamra Texts' (reviewed in ANTIQUITY), Pope has placed El in a context of genealogies of gods, as they are found in the ancient Near East. El is in several respects a parallel of the Greek Kronos and of the Hurrian Kumarbi, who was deposited by the storm god Teshub. At the same time as Pope has demonstrated the parallelisms, he has taken care so that only the Ugaritic texts themselves dominate his picture and not the parallelisms. Pope has also been very cautious in his philological treatment, and has not allowed his comments to be one-sided, e.g. in explaining most of the unknown words with the help of the Arabic language, as it is done by Løkkegaard and others.

It is a rich and fine picture, full of vivid details, which Pope gives of El in his well written book. We who have for years hoped to see a book by the hand of Marvin H. Pope on the Ugaritic texts, are glad to see that our expectations have come true. It is an excellent piece of work where all unnecessary and irrelevant features are kept out, and where all necessary details are given. The many indices make the details easily accessible. For all who want to know more about El in the Ugaritic texts, scholars as well as others, this book is a gold mine. ARVID S. KAPELRUD.

HAFFKÜSTENKULTUR UND URSPRUNG DER BALTEN. *By* —. KILIAN. *Habelt, Bonn*, 1955. *DM.* 42

This book is a revised and expanded version of a thesis presented to the University of Königsberg in 1939. Since then the original material prepared for the press has been lost (this may excuse defects of the illustration), and the author has spent several years as a prisoner of war, but has become acquainted with one or two English books, including Coon's *Races of Europe* and the *Annual Report* of the Institute of Archaeology. Kilian gives an account of one of the late neolithic cultures of the Kaliningrad Oblast of the R.S.F.S.R. and the Gdynia district of Poland that includes the famous amber deposits of Sammland. This region has been for long almost a *terra incognita* to which some prehistorians have hopefully looked as a cradle for novel cultures emerging west of the Baltic, and for that reason, if for no other, the author's illustrated account will be welcomed. (The illustrations include plans and reconstructions of the houses at Succase and of a composite barrow surrounded by a trench, by a ring-ditch and a double circle of posts, and by a stone kerb). The culture, designated by an untranslatable descriptive name that may here be replaced by 'Succase' in conformity with the normal usage of type-site nomenclature, is characterized by a local variety of corded ware and battle axes,

represented in a very few graves and numerous domestic sites. It is, the author argues, directly derived from the classical Corded Ware culture of Bohemia and Saxo-Thuringia ; not only its amphorae and beakers with their distinctive ornamental patterns, but also hammer-headed pins and a special type of bone girdle-clasp can be best matched there while Kilian cites four genuine faceted battle axes from the province. It is continued during the Middle and Late Bronze Age by a distinctive assemblage of barrows and metal types, dispersed between the Oder and the Dvina, but concentrated between the Vistula and the Memel. To this assemblage can in turn be traced later culture-groups in the same area, attributable to tribes of Baltic speech—Prussians, Lithuanians and Letts. Thus the ancestors of one Indo-European language family are traceable to the late Neolithic battle axe culture of Bohemia–Saxo-Thuringia. The author proceeds to suggest how the archaeological representatives of other Indo-European families might be linked up with the same source.

To this end he offers a new typology of battle axes that is theoretically very plausible. All battle axes with drooping blades (the earlier polygonal or knobbed series is not mentioned) would be derived from the faceted battle axe associated with Corded Ware. The latter was copied in copper, first literally, then without facets, yielding the Hungarian type (like my *Dawn*, fig. 52). The latter, in its turn translated back into stone, becomes Äyräpää's Boat Axe 1 or European type. So Boat Axe 1, whether in Denmark, South Russia, the Balkans or Asia Minor goes back to a Bohemian–Saxo-Thuringian prototype. It appears in the first phase of the Jutland Single Graves to which Kilian would like to attribute some of the 12 amphorae found in Jutland. Since in the Succase culture amphorae are never found in graves, but only in settlements the absence of amphorae from the single graves is no bar to deriving that culture from Bohemia–Saxo-Thuringia. Kilian agrees with Oldeberg in distinguishing in the Baltic Boat Axe cultures a ' southern ' element, derivable perhaps through Jutland, and an ' eastern ' that might come from Kaliningrad Oblast, but both would of course go back in the end to Bohemia–Saxo-Thuringia.

The Fatyanovo culture of Central Russia is termed a hybrid of Corded Ware and Globular Amphorae, that are both at home in the same part of Central Europe, though the so-called Fatyanovo battle axe may originate in a stage in the devolution of the faceted axe, earlier than Boat Axe 1. The author is plainly ignorant of recent Russian papers that divide the Fatyanovo culture into regional and chronological groups and incidentally emphasize the Corded element in its pottery. Similarly the corded wares of South Russia and the Ukraine and the bone hammer pins are brought direct from Bohemia–Saxo-Thuringia ; the author is blissfully ignorant of the gold pins from Alaca Hüyük and so undisturbed by their chronological implications.

Corded sherds have been reported from Early Helladic Greece (they have turned up in Thrace too since Kilian wrote) ; some Early Helladic amphorae are really like Corded amphorae in shape and bear patterns—painted or in relief—that can be matched thereon. Thus Greeks and Teutons, Balts and Slavs and even Indo-Iranians are neatly linked up with the Corded Ware culture of Bohemia–Saxo-Thuringia ! As further proof of the Indo-European character of its makers, the author might have invoked ' the knowledge of the wheeled car ' at Succase. But the evidence therefore is ' a *spoke* and a small segment of miniature clay wheel ' (p. 27, no illustration). This sounds like part of a model of a four-spoked wheel like those, published since the book was printed in *Pamatky Archeol.*, XLV, p. 219) from the Middle Bronze Age Věterov culture of Moravia which constitute the earliest dated evidence for spoked wheels north of the Alps and might suggest doubts as to the high antiquity of Succase.

This plausible restatement of the Pan-Germanist thesis cannot be refuted by pointing out methodological faults in argmentation or factually incorrect statements; when such blemishes—and there are plenty—have been eliminated, an imposing structure remains. For instance, it is no doubt unsound to single out one of the enormously varied Early Helladic-Troadic pot forms for derivation from Central Europe. Yet the analogies here cited do require explanation. A conclusive refutation of Kilian—or Witter or any other of that ilk—would be chronological—a demonstration that Early Helladic II is earlier than Corded Ware on the Elbe and the Saal, that battle axes there are later than at Thermi or Ay. That does follow from the assumption that pottery and metallurgy began earlier in Hither Asia and round the Aegean than north of the Alps. But this remains an undemonstrable postulate, justifiable only *a priori*, i.e. on grounds of social convenience.

V. GORDON CHILDE.

GRABSTOCK, HACKE UND PFLUG. Versuch einer Enstehungsgeschichte des Landbaues. *By* EMIL WERTH. 435 *pages*+231 *figs.*+25 *maps*. Verlag Eugen Ulmer, Stuttgart/Ludwigsburg. *DM.* 30.

The author is a veteran scholar of many parts and has travelled widely; his view of primitive agriculture, both ancient and modern, stretches literally from China to Peru. Many useful illustrations are provided of primitive agricultural implements and practices; distributions of various types are discussed at length. In addition, house forms, weaving, ritual beliefs and even intoxicating liquors do not escape attention.

Any reviewer would find his interest roused by such a wealth of matter, even if it settled somewhat on discovering that few of the publications quoted are recent or other than German, and that the archaeological allusions are in out-dated terms.

HUMPHREY CASE.

THE ANCIENT INHABITANTS OF JEBEL MOYA. *By* R. MUKHERJEE, C. R. RAO *and* J. C. TREVOR. *Camb. Univ. Press, Cambridge*, 1955. 123 *pp.* 40*s.*

Jebel Moya is a site lying between the Blue and White Niles some 250 km. SSE. of Khartoum, near the southern limit of the Gezira plain, in the Anglo-Egyptian Sudan. Between about 1,000 and 400 B.C. it was occupied by a people living in a Neolithic stage of culture. The late Sir Henry Wellcome, famed for pharmaceuticals and philanthropy, financed and directed its excavation during four seasons between 1911 and 1914, with the help of many associates, including such well-known persons as Oric Bates, Dudley Buxton, D. E. Derry, and W. D. Hambly.

The archaeological report has already been published (Addison, Frank, *Jebel Moya*, 2 vols., Oxford University Press, London, 1949). In it Addison reveals the presence of four successive soil levels, from top to bottom, A, B, C, and D, and states the opinion that a non-Negroid group, having come from the west to settle there, had absorbed local Nilotes by taking over their women. Both these items were considered of interest to the physical anthropologists who wrote the present report. Unexpectedly the site turned out to be largely a cemetery.

During the four field seasons two problems taxed the capacities of the physical anthropologists on the expedition to the utmost: the great number of burials that turned up—remains of 3137 individuals were recorded—and Sir Henry's philanthropic habit of hiring every local applicant that appeared. During the fourth season, when the fame of this practice had spread, the workmen became so numerous that the European staff was hard put to keep up with them. The three physical anthropologists, Oldham,

Hussey, and Hambly, measured 169, 233, and 172 skeletons respectively in three consecutive weeks. It is no wonder that this hectic work left something to be desired in accuracy, nor that a different team of anthropometrists came out each season, inevitably employing a variety of techniques in certain measurements.

The skeletal material was packed, brought to England, and stored in and about London for over thirty years, during which time most of the bones were destroyed and some of the labels obliterated. Sir Arthur Keith was first proposed to study this material, but he could not do it, nor could the next pair of nominees, G. M. Morant and Otto Samson. In 1946 the lot was sent to Professor J. C. Trevor at Cambridge. He in turn sent to India for assistance. Professor P. C. Mahalanobis of Calcutta had meanwhile devised a new mathematical formula for the purpose of comparing statistical samples. He had used this formula on anthropometric samples of Indian tribes, and Professor Trevor wanted to try it out on skulls. Messrs Mukherjee and Rao, two of Professor Mahalanobis' students, came to Cambridge and set to work on the Jebel Moya material, which by this time consisted of some 1500 field cards and fragmentary skeletal remains of 369 individuals.

Their first trouble was sexing. Influenced partly by the archaeologist's theory that few men from the west had settled in Jebel Moya with numerous local women, and deceived by the similarity between the bones of young males and those of adult women, as well as being too rushed to do a proper piece of diagnosis, all the field men except Derry, who worked only in the second season, reported a preponderance of females in the field cards, a preponderance which a laboratory diagnosis of the remaining specimens failed to bear out. Rao, therefore, devised a mathematical means of sexing the field measurements, which produced a ratio comparable to that of the laboratory sample, and to Derry's second season figures.

Trouble number two was measuring techniques. Not all of the anthropometrists who had survived into the late nineteen forties could remember exactly how they had executed each of the measurements, particularly in such haste. However a comparison of the laboratory bones with the measurements on the corresponding field cards showed which season's work was reliable and for which measurements. The second was the best season, bimalar the worst measurement. Mandibles from all seasons were inaccurately measured in some respects, and of the long bones only the femora were valid in the field cards.

Once these difficulties had been overcome, wholly or in part, by much ingenuity and hard work, the authors set about testing the archaeologists' invasion-and-absorption theory by comparing the skeletons from Levels B, C, and D, omitting A because it had too little material. Now they faced Trouble number three : stratigraphy. The soil changes had not been recorded directly on the grave cards until the fourth season. This difficulty was circumvented by equating grave depths with soil depths. After the skeletons had been seriated by levels, it was found that no differences could be demonstrated in sex ratio, variability, or morphological or metrical characters. The archaeological theory was not substantiated. The Jebel Moyans, from beginning to end, buried more males than females, were moderately variable, and were tall, large-headed, dolicho- to mesocephalic Negroes. They were also slightly prognathous, mesorrhine to platyrrhine, and long legged, with long forearms.

In order to determine the position of these people in the overall African racial picture, the two Indians calculated a prodigious number of statistical constants. First they selected 19 other cranial series and 10 series of mandibles, all from Egypt, the Sudan, East Africa, and West Africa. Then they selected seven anthropometric characters of

the skull and ten of the mandible, and within each series found coefficients of correlation between each pair of characters, after which they calculated weighted corrections for each character on the basis of its relationship with all other characters. Proceeding more or less after the manner of Pearson's Coefficient of Racial Likeness from this point on, they obtained values of D^2, Mahalononis' *Test of Group Divergence*, to all pairs of series.

The result of all this effort was the discovery that the Jebel Moyans of the early half of the first millennium B.C. were metrically closest to modern West Africans, and quite different from ancient Egyptians and Nubians and East Africans of various periods. Thus the archaeologists may have been partly right; the Jebel Moyans may have come from the West, but not as non-Negroids and not as bachelors. While no close statistical test of their relationship to the living Negroids of the Sudan could be made, the conclusion was reached that such a relationship existed. This was supported by the fact that some tribes, notably the Nuba, still practice the same mutilations and wear the same bead aprons as did the ancient Jebel Moyans.

Being no more versed in higher mathematics than in cuneiform, this reviewer can make no more sense out of the D^2 procedure than he can of the inscription on the Behistun Stone. However he cannot help wondering about three points that arose in the discussion of the method and its results. (1) Because the number of laboratory skulls was too small for statistical significance in the computation of coefficients of correlation, in place of the Jebel Moya figures the authors substituted those of eighteen coefficients previously calculated for the large Egyptian B series. (2) Three of the twenty-one coefficients wanted were still lacking. As the raw measurements for the Egyptian B series were not available for computation, the authors made a substitution within a substitution, using the figures from the Kerma skulls in their places. (3) After they had finished, the authors expressed a suspicion that the results might have been influenced by the absolutely large dimensions of the Jebel Moya crania.

The authors deserve much credit for their fortitude and ingenuity in making a unified report out of what might easily have become waste material. The money, time-energy units of trained manpower, and grief that went into the Jebel Moya expeditions produced a magnificent and expensive scramble that only great effort and ingenuity, years later, could untangle; but did it not, at the end, get a bit complicated all over again? We physical anthropologists must resign ourselves to keep up with the times. The proper comparison of human phenotypes may well need a formula as elaborate as that of the trajectory of a guided missile. But will D^2 guide us to our target?

CARLETON S. COON.
The University Museum, Philadelphia.

L'ARCHITECTURE MUSULMANE D'OCCIDENT: Tunisie, Algérie, Maroc, Espagne et Sicile. *By* GEORGES MARÇAIS. *4to. Published, under the auspices of the Gouvernement Général of Algeria, by Arts et Métiers Graphiques, 18 rue Séguier, Paris. 4000 francs.*

This work is really a second edition of Marçais' *Manual d'Art musulman. L'Architecture : Tunisie, etc.*, which appeared in 1926. But it has been enlarged to a thick quarto volume of 541 pp., with 64 plates and 286 figures. The author has devoted fifty years of his life to the study of the Muslim architecture of North Africa and must have a wider knowledge of its monuments than any man living. And his field includes Muslim Spain, which at certain periods, as he clearly shows, is closely related to that of North Africa, especially during the 'Reconquista', which caused an enormous emigration thither of Muslim architects and craftsmen, with a visible effect on its art and architecture.

The author has hit on a very happy arrangement of his material, as follows: Aghlabids, Fāṭimids (including the Norman-Saracenic monuments of Palermo), Umayyad Spain, Spain during the XIth, XIIth and XIIIth centuries, the successors of the Almohads, Mudejar art, Morocco under the Sherefian dynasties, Algeria during the Turkish period, and Tunisia under the later Ḥafṣids and the Turks. Each of these sections is sub-divided into three, as follows: (1) The Historical circumstances; (2) The Architecture; (3) The Decoration of the Monuments.

As regards the last section, it is fortunate that the author is wonderfully gifted as an artist, which has enabled him to draw the most complicated ornament in stucco or stone, to separate the different motifs, and to form comparative tables showing the variants of each. These numberless drawings and groups of motifs, palmettes, varieties of capitals —Almoravid, Almohad, Merinīd, Ḥafṣid, etc.—form one of the outstanding features of the book.

There are, however, one or two places where the author clings to ideas which no one can maintain are any longer tenable, e.g. the alleged *Roman* squinches of the north gateway of Tebessa (p. 21). This gate is a great tetrapylon, and the interior, which forms a square of about 5 m., was roofed as follows. Above a double tier of corbels are great stone beams, which project from all four sides, their bevelled ends meeting on the two diagonals of the square. They are kept in position, partly by counterpoise and partly by the weight of the massive walls, 1.20 m. high, which form the entablature. At some unknown date the longer beams broke off short, probably as the result of an earthquake, after which rough squinches of *rubble* to carry a shallow dome were built behind the four corners of the *ashlar* entablature.

The other case (p. 12) concerns the central aisle of the Great Mosque of Qairawān which, unlike the rest, is flanked by two arcades in contact. The arches of these double arcades are separated by a gap of several centimetres, roughly plugged with cement. They cannot have been constructed simultaneously for each outer arcade is formed of round horse-shoe arches like the rest, whereas those of the 'lining' arcades are of pointed horse-shoe arches with slightly more return. In addition to this each column has its own impost block. Had these double arcades been built simultaneously it is *impossible* to believe that any architect would not have tied the pairs of columns together with a common impost block, as the Ḥafṣid architect has done for all the pairs of columns round the ṣahn. Nor can one believe that he would not have constructed each pair of arches as *one* arch over *one* centering 1.25 m. wide, instead of using two centerings side by side of quite different outline. One is forced to conclude that the 'lining' arcade was inserted later by Abū Ibrāhīm Aḥmad to make the width of the central aisle more nearly equal to the transverse aisle at the back, and so facilitate the placing of a dome in front of the miḥrāb.

The author suggests a different solution, maintaining that the arcades of Ziyādat Allāh's sanctuary in 836 only consisted of three arches each, and that Abū Ibrāhīm Aḥmad in 862 lengthened them by adding four more arches to each. This makes things worse, for it asks us to believe that the incredible architectural procedure referred to above was actually adopted on two different occasions.

The Gate of Mahdīya (pp. 90–91). After the systematic and scientific blowing up of the fortifications of Mahdīya by Charles V, described so minutely by Marmol Caravajal, it is impossible to believe that the present gate can go back to Fāṭimid times. It reminds one of Turkish gateways such as the Bāb al-Wustānī in the Citadel of Cairo and may well be Turkish likewise.

As regards his chapter on the Great Mosque of Cordova (p. 135 ff.) the author does not appear to be aware of the epoch-making discoveries recently made in the Aqṣā

Mosque during partial demolition and rebuilding. We now know that a double tier of arcades existed there in Umayyad times, that these arcades all ran right up to the qibla wall without the intervention of a transverse arcade, that they were covered with parallel gable roofs, and that provision for a dome in front of the miḥrāb was only made under the Khalif al-Mahdī in A.D. 780 (or 772); see R. W. Hamilton, *The Structural History of the Aqsa Mosque*, Oxford, 1949. All this helps to explain the great Mosque of Cordova of 'Abd ar-Raḥmān I in 788, more completely than was possible before.

However, in spite of these permitted differences of opinion, all will admit that the author has presented us with an attractive and imposing volume of well arranged material, not to be found collected together in any other work. K. A. C. CRESWELL.

THE ATHENIAN AGORA: A Guide to the Excavations. 110 *pages*, 8 *plates*, 19 *text figures and a folding plan. Athens* (*American School of Classical Studies*), 1954. $1·00.

This is the first official guide to the American Excavations in the Athenian Agora and it sees the light of day at a time when the digging is over and while the appearance of the site changes daily with the growth of the restored Stoa of Attalos, destined to be the Agora Museum, and the landscaping and tidying of the area, designed to make the antiquities at once more intelligible and more attractive. As a Guide it successfully avoids the commonest faults of such books. There are many (almost too many) clear plans, and the other illustrations are of buildings and monuments in their restored entirety in plaster or on paper, and not just pictures of their sorry foundations revealed by the spade. Facts are clearly stated without the burden of too many figures. The price is fair although the paper cover parts company with the body of the book too readily. As well as a general historical survey of the site there are short studies about the route of Pausanias, the water supply, early burials and remains of habitation, and a select bibliography, which lend it more lasting value than a simple guide to the remains could claim. In view of the many ill-informed attacks on the archaeologists' removal of 'quaint Turkish houses' and conversion of the area into what appeared to be a bombed site it is interesting to note that most of the houses standing there were of the mid-nineteenth century; for the loss of them (with 300,000 tons of earth) the new garden, museum and information about ancient Athens seems more than fair recompense.

JOHN BOARDMAN.

LE SANCTUAIRE PUNIQUE D'EL HOFRA A CONSTANTINE. *By* A. BERTHIER *and* L'ABBÉ RENÉ CHARLIER. *Arts et Métiers Graphiques*, 18 *rue Séguier, Paris* VIE. 4000 *francs.*

This admirable publication shows what can be done by way of prompt and effective publication of an important discovery. As M. Grenier says in his Preface, the author's industry is an example to others. The find consisted of some five hundred inscriptions, some imperfect, from a site near the Hotel Transatlantique in the immediate neighbourhood of Constantine in Algeria. Most of them are dedications on stone tablets to Baal Hammon, made by votaries, usually named. The majority of the inscriptions are in Punic, but a few are in Greek and Latin. Nine of them can be dated and all appear to belong to the middle of the second century before Christ, immediately before and after the fall of Carthage.

The few non-Punic inscriptions establish an equation of Baal Hammon with the Greek god Kronos and the Latin one Saturn; he had therefore at last displaced and superseded his father El.

Many of the tablets have what has been called the ' sign of Tanit ' (here appropriated by Baal) consisting of a triangle supporting a round disc (the head) and with horizontal lines (representing arms, sometimes uplifted from the elbow). The author is undoubtedly right in regarding this so-called sign as simply the stylization of a well-known type of (Aegean?) figurine. This interpretation is confirmed by Plate XXII A, which shows the triangular figure placed upon a sort of pedestal. Similar representations occur in the Syrian region during the 4th millennium, showing the Eye Goddess's figurine on a pedestal or platform (Iraq, IX, part 2, Plate XXVI, 1 and 2). Now the Eye Goddess was almost certainly the Syrian equivalent of Ishtar ; and the Punic goddess Tanit is also directly descended from her. Tanit's epithet ' face of Baal ' (Pheneba'al) is probably an allusion to the importance attached to her face and eyes in the original cult.

The three curved lines sprouting from the shoulders of the highly conventional figure on Plate XXII C are surely the symbols of vegetation that are to be seen on the shoulders of Sumerian deities (see for instance those on a vase of Entemena of Lagash of the mid-3rd millennium ; Pritchard, *The Ancient Near East in Pictures*, 1954, Plate 172, No. 505).

On many of the tablets are depicted hands, ancestors of the hand of Fatma that still adorns the door-jambs of Berber houses in Tunisia and elsewhere.

The representation of the caduceus is evidence of syncretism, being derived of course from Greek iconography.

The illustrations are all excellently reproduced from photographs. They are a mine of information about oriental cults which survived in this Semitic outpost of a far-distant oriental region. O.G.S.C.

CORINTH, VOL. I, PART IV. The South Stoa and its Roman Successors. *By* OSCAR BRONEER. 167 *pages with* 54 *plates*, 22 *plans and numerous text drawings. American School of Classical Studies* (*Princeton, New Jersey*), 1954. $15.00.

Professor Broneer claims, with good reason, that the South Stoa at Corinth is ' an example of Greek secular architecture at its best ' and that its architect ' deserves a special place of honour in the history of architectural design '. Which makes this volume more than the final report on the excavation of a building ; it is in fact rather an important chapter in the history of Greek architecture itself. The great Stoa was built in the third quarter of the 4th century before Christ, at a time when Philip of Macedon chose Corinth as the centre for the League which he hoped would unite Greece. The original purpose of the Stoa may have been to provide a ' Grand Hotel ' to accommodate and entertain the League delegates ; but the building long outlived Philip's hopes, and was probably not even finished before his death. Its impressive colonnade, over 160 metres long, gave access to 33 small shops or taverns, most of which were provided with wells in which foodstuffs or wine could be kept in secure cold storage. Behind the shops were other rooms, and above them apparently a series of apartments with antechambers to house the visitors, though the evidence for the arrangement of this part of the building is unhappily fragmentary. Its position across the south side of the Corinth market-place dominated the whole area and determined all subsequent building there.

The Stoa survived the Roman sack of the city in 146 B.C. ; and when Caesar founded the new colony there in 44 B.C. the building was patched and converted piecemeal into a row of offices, a fountain house and a bath, where once the rear rooms of the shops had stood. Thus it remained until the pagan invasions of the third and fourth centuries after Christ finished Corinth as a major Greek city. Full justice is done by the publisher to the history and architecture of this remarkable structure, and the superb plans,

photographs and imaginative reconstructions present it clearly. Great architecture applied to secular buildings is often the occasion for incongruities; it is hard to escape from the suspicion that, in its hey-day, the South Stoa must somehow have resembled the colonnaded flanks of the square before St. Mark's in Venice during a Film Festival.

JOHN BOARDMAN.

THE ANCIENT NEAR EAST IN PICTURES, RELATING TO THE OLD TESTAMENT. *By* JAMES B. PRITCHARD. *Princeton University Press*, 1954 (*received* 1955). *Cumberlege, Oxford U.P.* £8 8*s*.

This splendid book is designed to illustrate and supplement an earlier volume published a few years ago of Ancient Near Eastern Texts relating to the Old Testament; like that one it is intended for the use of both 'the average reader and the scholar'. It is divided up, conveniently and logically, into eleven sections covering people and their dress, daily life, writing, scenes from history and monuments, royalty and dignitaries, gods and their emblems, the practice of religion, myth, legend and ritual on cylinder seals, views and plans of excavations, maps, and catalogue. The last item occupies nearly a hundred pages and gives all the relevant facts (including dates and bibliography) that the reader is likely to need. The arrangement is such that one can easily find what one wants, and if there is any difficulty the index removes it. No praise can be too high for the illustrations themselves (chiefly reproductions of photographs), the more so because one knows how bad many archaeological photographs are. The labour of compiling such a book must have been great; only those who have themselves had to do it can realize that the work involved in compiling a hundred large pages of catalogue entries is many times greater than that required for the same number of pages of narrative text. The value for users of the book is proportionately greater.

We find here many old friends and some new ones, and the fact that some of the photographs were made by the compiler himself suggests that he was not satisfied with existing ones. It is well known to students that museums often do not possess any photographs at all of some of their more important specimens, or possess inferior ones only, although their facilities for taking them are always greater than those of the outsider. No doubt lack of money is sometimes the reason; but there are others.

How useful would be similar volumes for other regions and periods! A volume, for instance, covering the prehistoric Aegean and Greece (Troy, Mycenae, Tiryns, Asine, Crete); another covering Italy, Sicily, Sardinia and Malta; another of Spain, Portugal and the Balearic Isles. Much archaeological writing is based upon the study and comparison of pictures, and for lack of such picture-books as this one has to search through inaccessible periodicals and books, often to be rewarded at the end by a mere smudge or a bad drawing. Is it too much to hope that those responsible for the publication of the present volume might continue their good work by producing others on the lines suggested? Meanwhile we owe them a deep debt of gratitude for what has already been accomplished. This is a book which all students should possess; though the price is high it is well worth the money.

O.G.S.C.

JERICHO

Showing early 'non-pottery neolithic' fortifications. The lowest figure stands in the rock-cut ditch; the two middle figures are on or by the lower part of the town-wall; below the uppermost figure is part of the internal circular tower. The whole of the accumulation shown at the side of the cutting is non-pottery neolithic. *Ph.* Miss Kenyon